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ORIGINAL ARTICLES

THE LIFE AND WORK OF DR. DANIEL BRAINARD*

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Ladies and Gentlemen: I have been invited, or rather ordered, to address you on the life and work of Dr. Daniel Brainard, the founder of Rush Medical College, in this celebration of the centennial of his birth. It is difficult to determine why this duty was assigned to me. Possibly it is because I had the misfortune to have been born a little time earlier than any of my colleagues; possibly because more than forty years of service in this institution was supposed to have given me a larger knowledge of the subject than others possessed; possibly because my revered uncle and preceptor, the late Dr. Ephraim Ingals, had been a close friend of Dr. Brainard, had known him intimately and had fallen heir to many of his responsibilities in personal and college business; but I think the real reason lies in the fact that at the time the selection of an orator for the annual commencement of the college was made by the faculty, I was a thousand miles away and had no opportunity to decline the honor.

A few years ago Ephraim Ingals could have given me, first hand, a history of the life and achievements of Dr. Brainard. Three years ago I could have obtained much of the information from Dr. Brainard's son; and a year ago I could have gotten it from his nephew whom I knew very well; but these have now all passed to the beyond. The information I personally have obtained about him has largely been gained from the library of Rush Medical College and from several of Dr. Brainard's published articles, found in the Library of the Surgeon-General's Office at Washington; but for a large part of the facts I am indebted to Dr. George H. Weaver, who made an exhaustive search of the literature and corresponded with many of the old alumni. I do not remember Dr. Brainard, but I undoubtedly saw him during the cholera epidemic in

* The annual address at the Sixty-Ninth Commencement Exercises of Rush Medical College, June 12, 1912, the centennial celebration in honor of its founder.

this city in 1854. My uncle occasionally spoke of him to me and gave me some of the details of his last illness.

Daniel Brainard was born on the 15th day of May, 1812, in the town of Western, Oneida County, N. Y. He was the fifth child in a family of nine, born to Jepthai Brainard, Jr., and Catharine Comstock Brainard. The father of Daniel Brainard was a farmer in comfortable circumstances and of excellent character, while his mother was a most exemplary woman whose influence was deeply impressed on her children, and she doubtless did much in awakening the genius and inspiring the aims of her son Daniel. He was given a good common school and academic education, the latter probably in the Oneida Institute in Whitesboro, N. Y. In 1829 he began his professional studies in Whitesboro with Dr. R. S. Sykes, but he soon went to Rome, N. Y., where he continued his studies in the office of Dr. Harold H. Pope, a distinguished physician of the place. He attended his first course of lectures in Fairfield Medical College, and afterward two courses in Jefferson Medical College in Philadelphia where he received his degree in 1834 when 22 years of age. After graduation he returned to Whitesboro where he remained two years with his preceptor, nominally in practice but mostly engaged in the study of Latin and French, and in professional teaching. In the spring of 1836 he gave a course of lectures on anatomy and physiology in the Oneida Institute, and shortly afterward came to this city.

The Hon. John D. Caton, a lawyer and friend who had studied law in Philadelphia at the same time that Dr. Brainard was studying medicine, thus describes his arrival in Chicago:

"Dr. Brainard rode up to my office on a little Indian pony. He was dressed rather shabbily and said he was nearly out of funds and asked my advice about commencing the practice of medicine in Chicago. I knew he was ambitious, studious, and a man of ability, and I advised him to go to the Pottawatomie camp where the Indians were preparing to start for a new location west of the Mississippi River, and sell his pony; take a desk or rather a small table I had in my office and put his shingle by the side of the door, promising to aid him in building up a business."

Dr. Brainard seems to have made slow progress in securing a practice, the first two years of his stay in Chicago, and I was told by my uncle that he slept on his knapsack until he earned enough money to buy a bed; but in 1838 a laborer working on the canal several miles from the city fractured a thigh bone, and before a complete union had taken place he came to Chicago on foot, which induced so much inflammation that at a consultation held by Drs. Brainard, Goodhue, Maxwell and Egan, it was decided that amputation was necessary. The majority advised amputation below the trochanters, while Dr. Brainard thought the limb should be amputated at the hip-joint. Dr. Brainard was selected to operate, while Goodhue was to compress the femoral artery. The young surgeon removed the limb below the trochanters when he found that the medullary substance of the bone was diseased higher up. He immediately proceeded to amputate at the hip joint. The patient progressed favorably for a

month and the wound was nearly healed when secondary hemorrhage occurred proving fatal.

Post-mortem showed a large bony neoplasm attached to the pelvic bones and surrounding the femoral artery. This case attracted much attention and contributed largely toward giving the surgeon a leading position in the community.

Dr. S. D. Gross, in his "Kentucky Surgery," says that "Dr. Walter Brashear, a native of Kentucky, performed the first amputation at the hip-joint in the United States in 1806. This was eighteen years prior to the case of Dr. Mott of New York." Speaking of Dr. Brainard's case, the late Dr. Hyde said, in "Early Medical Chicago": "It is likely that a number of such operations had been performed in this country, but it is certain that we have records of only two or three at the most."

In 1837 Dr. Brainard opened a private School of Anatomy which he continued several years in his rooms on Clark Street opposite the Sherman House.

In May, 1842, he was appointed to the chair of anatomy in the St. Louis University, where he delivered two courses of lectures.

In 1839 he went to Paris, France, where he remained until 1841. There he spent most of his time in studies preparatory to opening Rush Medical College, for which a charter had already been obtained; but the college was not actually opened until December, 1843, when he assumed the duties of professor of anatomy and surgery. He soon gained an enviable reputation as teacher and operator. In 1852 he again visited Europe and at that time was elected a corresponding member of the Surgical Society of Paris. In 1866 he again spent several months in Europe, but returned in the latter part of the summer, leaving his family in Paris. During the summer cholera had broken out in Chicago but it ceased about the middle of August; however, about October 1 the disease suddenly developed with renewed virulence, causing about 1,000 deaths before the end of the month, and among the victims was Dr. Brainard. On the afternoon of Oct. 9, 1866, he digressed from the subject of his lecture in Rush Medical College to tell the class how to guard themselves against the cholera, and before he retired late that evening he began an article on this subject the first page of which we now have in the archives of the college. He went to bed apparently in perfect health, but near morning had an attack of diarrhea which he checked with opiates. He arose as usual the next morning and had no symptoms of sickness until 9 o'clock when he was suddenly attacked with vomiting and diarrhea. My uncle and other members of the faculty were called, but by 2 o'clock he was in collapse and seven hours later he ceased to breathe.

This melancholy event created a profound sensation in the community. The day was dark and gloomy, the epidemic was at its height and the emblems of mourning overshadowed the public buildings in memory of the officers of the city government whom the pestilence had stricken. Many members of the medical profession gathered at the Court House in testimonial of their respect for the honored dead, and on the morrow a large assembly at St. James' Church told how deeply was felt the loss

that had been sustained. At the meeting of the profession a committee of five was appointed to draw up resolutions expressive of their sorrow and sense of loss. Three of this committee, viz., Drs. Hosmer A. Johnson, Charles Gilman Smith and G. C. Paoli, I counted among my friends in the early years of my practice and I feel sure they were sincere in their expressions about Dr. Brainard. Dr. Paoli voiced the opinion of the profession in the following words:

"He was no ordinary man. Highly gifted by nature, his powers were cultivated by study, and from pure love of the profession he devoted himself with untiring zeal to the work of instruction. As a surgeon he had few equals, as an operator he was cool, cautious and bold. As a lecturer he possessed to a remarkable degree the rare talent of profound clearness in communicating his ideas to his listeners . . . and excelled all other lecturers I have heard in condensing the greatest amount of instruction in the fewest words."

Physically, Dr. Brainard was tall, well proportioned and strongly built. He was dignified almost to reserve, and among those who did not know him, this gave him the reputation of being cross and crabbed; but this was an error. His words were few but to the point. One of the old alumni writes: "His appearance in the class-room was quiet and unassuming. Without preliminaries he announced his subject, and in a concise manner proceeded to elucidate his theme, with which he was always perfectly familiar; his teaching was exceedingly plain and practical and free from technicalities. As a public speaker he was forceful and always commanded attention. Although the rules of aseptic and antiseptic surgery were then unknown, he was extremely particular in his operations to have well-cleaned apparatus, hands and instruments."

At the time of his death he had been engaged on an extensive surgical work which remained unfinished; but those who heard him and witnessed his skill as an operator remember him as one of the most eminent American surgeons. He was a close student, an original and independent thinker and an active investigator.

In 1849-51 he used solutions of iodin and iodid of potassium by injections into serous sacs on the theory that changing the quality of the fluid would stop further effusion and promote absorption, and he adopted this method for the cure of spina bifida. He also made numerous experiments with various substances in the hope of finding a cure for cancer. He applied these directly or injected them into the blood current. At that time he treated cancer, when practicable, by removing the growths thoroughly, and after what seemed successful experimentation on animals, by the administration of lactate of iron by the stomach and by injections of the same every six to ten days into the veins. Most of these cases seemed to improve for a time, but afterward lapsed into the previous condition. One fact, however, was developed by the injections, namely, that some substances may be thrown with perfect safety directly into the venous blood, which if injected into an artery or into areolar tissue would produce most destructive results. Several times during these experiments a few drops of lactate of iron which were allowed to infiltrate areolar

tissue invariably destroyed it, leaving an ulcerated surface. His treatment for ununited fractures is the best known of his surgical achievements; but his most important work and one that has had a greater influence on the medical profession than he even dreamed of, was the founding of Rush Medical College. The charter of this institution was granted by the legislature of Illinois in March, 1837, but the trustees did not appoint a permanent faculty until October, 1843. The first session of the institution was opened Dec. 4, 1843, at which time Professor Brainard delivered the inaugural lecture. In that address on the first day of the first session of Rush Medical College, he said:

"We have chosen the subject of 'Institutions of Science, Their Influence in a Community, and Their Claims on the Fostering Care of the Public' . . . because of the sovereign influence exercised by public opinion which holds the place of supreme power in our own country. Elsewhere such 'appeals of argument or persuasion' were addressed to governments where princes or the munificence of private individuals laid the foundations of universities, while in this country, 'but especially in the West, is it essential that the public mind should be directed to the founding . . . of institutions of science.'

"It were easy to see that every class of citizens is interested in the establishment of a medical school at this time and place. We might appeal to men of business and capital, and by rigid calculation of the advantage of such institutions, convince them that it is to their interest to aid in this promotion. We might point them to Louisville or Lexington where, without many of the advantages of location which we possess, schools have been established which contribute materially to the prosperity of those cities.

"We might appeal to the poor. The establishment of a hospital or dispensary where they may receive gratuitous aid without subjecting themselves to disagreeable personal obligations, or being associated with public paupers, is an essential part of our undertaking. We might appeal to the benevolent. What heart sharing the common sentiment of humanity but would delight in contributing to an undertaking whose sole result is the relief of suffering."

In pointing out the advantage to young men of a medical school in this community he said: "I might bring forward in our own profession the example of the first and greatest of its minds, that of John Hunter, who was a cabinet-maker before commencing his studies. . . . Velpeau, one of the most eminent of living surgeons, was also a mechanic, and I have heard him . . . speak of the time when he was a blacksmith."

"The health, the happiness and the life of your dearest friends, and your own may, and will some day depend on the skill of some member of the medical profession"; and this thought we wish to impress on the public mind to-day in urging the supreme importance of the highest type of medical education in this city.

He continued: "To elevate the standard of skill and knowledge in the profession, to excite an honorable emulation among its members, to

disseminate in this new region the principles of medical science in its perfected state — such are the objects held in view by the founders of this institution."

How well this ideal has been followed by the men who have devoted their lives to this work during the sixty-nine years that have elapsed since these words were uttered is attested by the lives and work of thousands of the alumni of Rush Medical College; and to-day the zeal, the devotion and the work of the men who are carrying out the objects of the founders of this college are an honor to the profession and to the institution which was opened on that day.

He stated that at that time by some the project was considered premature and it was argued that students could not be obtained, teachers procured, or suitable buildings rented, and that it was useless to present the advantages of education to the public until their physical wants and their resistance to the encroachments of hunger and cold were satisfied. He believed the time for such objections had passed and with remarkable assurance and confidence he said of that day in the West, and in this city, which then had only about 4,500 inhabitants; "Nowhere are the people at large so surrounded with the comforts of life; nowhere are there such numbers of youth whose means enable them to pursue literary studies, whose minds are so open to noble impressions, but with so few institutions to lead them on and gratify their desires. The present then is emphatically the time when schools of every kind, but especially those of the professions, should be established."

The opinion that suitable teachers could not be found in the West he said "is alike unfounded," and "next to the merit of making great discoveries in science, is that of extending them in regions where they would be otherwise unknown."

Dr. Brainard felt very pessimistic regarding the influence of national and state examining boards in raising the qualifications of physicians; but when we consider the marvelous things that have happened during our own lives — things that no one could have foreseen, we cannot criticize him for not anticipating the real benefits from these sources that are now apparent; although they did not come for nearly half a century. But even to-day the aim of most of these boards is far below the ideals for which this institution is working.

At that time he insisted on the importance of preliminary education, high moral character and general culture. He said: "The natural qualities most requisite for a physician are talent of observation, industry, resolution, and a benevolent disposition."

Dr. Brainard firmly believed in specialization and advised students after having gained a good general knowledge of medicine to "select that branch for which they thought themselves best suited and to embrace it in every detail." He said further: "Every improvement, moreover, is the result of studies confined to some particular subject," and years afterward he used to say that success was assured to the man who knew how to do one thing better than any one else. In an address to the American Dental Association in 1865 he urged more forcibly the importance of

specialization because it was impossible that any man should master medical science in all its details, and he named numerous parts of the body and several diseased conditions that were worthy of the whole time of some men. Among others he spoke of fractures which demanded a great deal of special study, and better appliances. In illustration he said that a great many appliances used in treating fractures of the leg, called "fracture boxes, were no better than dry goods boxes, and simply served to conceal from the surgeon the position in which the limb might happen to lie"; and he said that the reason for this was that no man had ever yet devoted himself to fractures as a specialty.

He said: "The principle that I wish particularly to assert is that the medical profession in order to be most useful, in order to acquire its due influence over the community, in order to perfect its knowledge of the nature and treatment of diseases, must adopt a special course of study; each individual member embracing that course which he judges on the whole to be best adapted to his faculties, and leaving out to a certain extent others for which he has no qualifications. I advocate special studies and special practice; and although the words have been somewhat discredited, I advocate specialties and specialists."

In an address to the graduating class of Rush Medical College, session of 1848-49, Dr. Brainard said:

"In every climate, in every place, wherever disease is found, there is a physician striving to relieve it; and whether successful or not his mission is nevertheless divine and charitable, soothing and consoling beyond the power of words to express. . . . Medical science embraces every known method of curing disease. Whatever may be the principle, if it be found useful it is adopted."

This is the foundation on which this institution was laid and on which its instruction has ever been given. We say to you: "Prove all things and hold fast to that which is good."

In the same address we find a somewhat amusing evidence of Dr. Brainard's confidence in Chicago, and in western medical colleges (which at that time meant every one this side of the Alleghanies). He said: "The statement has recently been made by a Dr. Holmes, professor in a not very flourishing medical school at Boston, that the multiplication of medical schools at the West is doing great mischief in the profession. . . . For a country possessing all the advantages for containing a large population, calculated from extent and situation to be the center of the republic . . . with all its advantages, to be dependent on some villages a thousand miles off for its physicians, would certainly present an anomaly in the general order of things"; and further: "But a few years since, the place we inhabit was on the extreme verge of civilization, and stretching far away to the west was a desert scarcely trodden by the foot of civilized man. Now the emigrant turns from our crowded streets . . . to the far distant . . . shores of the Pacific ocean."

To appreciate this you must recollect that then Chicago was a town of only a few thousand inhabitants and that it had no railroads to the

east or west and nothing was known of many marvelous things that have developed during the lifetime of your present teachers.

In the same address he said: "It is now seven years since the germ of our medical college was planted," when "six individuals were found willing to listen to the teachings of a private course on a single seat; the next year another was added and the third year some twenty persons were in attendance on our course. . . . Step by step has the school advanced, until its alumni constitute a large body of the most respectable practitioners of a wide extent of country. . . . Our infant institution has already acquired a development which is a guarantee of its future advancement. It is associated with the destinies of a great and powerful city, and its prosperity and continuance will be commensurate with her growth and duration. It can never perish."

To-day it is nearly three-quarters of a century since this germ was planted. The city with whose destinies it was associated has grown from 5,000 to nearly 3,000,000. Our classes gradually increased until at one time there were a thousand students in a single year, and our alumni, counted by thousands and thousands have occupied the front ranks of the profession not only in this country, but they have filled honorable positions all over the earth.

But far more important than growth in size and numbers has been our advance in the character of instruction, in the facilities afforded to gain a knowledge of the healing art and in the additions which this college is making to medical science.

Dr. Brainard was one of the organizing members of the Illinois State Medical Society, and an early member of the American Medical Association, of which he was vice-president in 1850.

Nov. 28, 1853, Dr. Brainard read before the Academy of Science in Paris a paper on experiments on "The Venom of Rattlesnakes, the Effects of the Venom, and the Means of Neutralizing Its Absorption," and three months later he presented a paper before the same Academy by himself and Dr. Greene, on "Iodin as an Antidote for Curare." Dec. 6, 1853, he read a paper before the Society of Surgery of Paris entitled "On the Injection of Iodin into Tissues and Cavities of the Body for the Cure of Spina Bifida, Chronic Hydrocephalus, Edema, Fibrinous Effusions, Edematous Erysipelas, etc." At this time he was made a corresponding member of the Société de Chirurgie of Paris. Dr. Brainard was president of the Illinois State Medical Society in 1854. As his presidential address he read a paper entitled "Essay on a New Method of Treating Serpent Bite and Other Poisoned Wounds," in which he introduced much of the material embodied in his earlier reports in Paris. The paper was based on numerous experiments on pigeons, cats and dogs with putrid matter, such as that inoculated in dissecting wounds, woorara and the venom of serpents. He spoke of the manufacture and action of woorara, known also as the American poison (used on arrows) and gave several reasons for his own belief that the active principle of this poison was the venom of serpents as follows:

"1. Its effects on birds and animals are strikingly like those produced by the venom of the rattlesnake; and in many cases no difference can be perceived between them.

"2. These effects are entirely unlike those produced by the vegetable alkaloids.

"3. Iodin neutralizes it as it does the venom of serpents, but has no such effect on vegetable alkaloids.

"4. It is like the venom of serpents, innocuous when taken into the stomach, except, perhaps, when used in very large quantities, or in circumstances very peculiar. This is not the case with any known vegetable poison.

"5. It is well known that the poison used by the North American Indians for their arrows is that of the rattlesnake. I have learned this from such varied sources as to leave no doubt on the subject."

His third reason is of special interest because of the positive statement regarding the effects of iodin in neutralizing poisons.

His method of treatment consisted of:

1. Application of cups on the part, or of ligatures around the member wounded, so as to arrest absorption.

2. In injecting or infiltrating into the subcutaneous tissue the solution used as an antidote.

He directed that the cups be applied a short time before the solution was employed so as to fill the tissues with fluids and prevent the injected liquid from producing abscess by mechanical injury. The cups were kept on five or ten minutes after the antidote had been injected in order to allow time for it to come in contact with the poison before it entered the circulation; but where much swelling and effusion had taken place before treatment could be applied, the application of cups was unnecessary as the fluid injected would in that case pass freely through the tissues without the cupping.

He used as the antidote a solution of iodin, 10 gr., and iodid of potassium, 30 gr., in an ounce of distilled water. In recent cases he advised that 1 dram of this solution be injected, if necessary at several points so as to infiltrate the tissues with it for the space of an inch around the wound. He also applied the solution on the surface. In cases where there was already extensive swelling he reduced the strength of the solution by diluting it three or four times, but he does not state whether he used more or less of the solution.

For injecting the fluid he employed a small trochar to which, after it had been introduced, he fitted a syringe that had been filled with the solution. The solution was gently pressed in drop by drop. At that time there were no hypodermic syringes such as we now have and cups were in common use. Many of you may never have seen a cup used and very few physicians now possess these instruments; but it seems to me that with a hypodermic syringe the tissues could be easily and quickly infiltrated with the solution, without cupping, and you will note that when swelling had already ocurred he did not consider the cupping necessary.

As iodin attacks nickel and some other metals very quickly, it would be best to have a glass hypodermic syringe. The needle might possibly be ruined; however, I have used hypodermic needles with solutions of iodin repeatedly without injuring them very much.

This treatment never came into general use, indeed I doubt very much whether many physicians have ever heard of it; but it proved so very effective in his experiments that I have great confidence in it and whenever I travel in regions where there is danger of snake-bite I carry with me a solution of iodin and a hypodermic syringe instead of a bottle of whisky, and I earnestly urge physicians to adopt this method of treating poisoned wounds. It would doubtless be equally effective in the prevention of rabies if it could be promptly applied, and I believe it should be used for dog-bites instead of the forms of cauterization that are commonly applied.

Dr. Brainard stated that not more than one in ten of the wounds caused by the most venomous serpents proved fatal. His experiments seemed to prove that the methods of cauterization with nitrate of silver, ammonia or the mineral acids did not in any way antidote the poison and had no influence excepting possibly in limiting the amount of absorption. The influence in this direction would be nothing whatever if a few minutes had elapsed after the injury before the treatment could be applied. His experiments caused him to say with reference to the very free use of alcoholic stimulants as an antidote for snake-bite that they did not prevent but sometimes hastened death.

He carefully described his experimental technic and the effects of the venom on the blood, and repeated his experiments before the society. Among his conclusions he states that to be effective the antidote must be infiltrated into the tissues and that "this infiltration can be performed without causing loss of substance, or producing either eschar or suppuration." I am pleased to note that he freely acknowledged his indebtedness to the late Dr. Hosmer A. Johnson of this city, who assisted him in his experiments, and to others who had contributed in some way to this research.

I wish to-day to impress on each of you that the man who attempts to further his own reputation by neglecting to give all possible credit to others is making a great mistake; and I wish specially to urge you to ever manifest the magnanimous spirit so constantly shown by the heads of our pathologic and medical departments, and others of my colleagues, in giving the fullest credit to their subordinates.

In the article just referred to we find that Dr. Brainard by his experiments discovered the surpassing value of iodin as an antiseptic, although he did not know the bacteriologic reasons for its effectiveness, that were discovered a quarter of a century later by Pasteur and which were first applied in surgery by Lister.

At the meeting of the American Medical Association in St. Louis in 1854 the Committee on Prize Essays reported that nine essays had been submitted but that they had awarded only one premium, which was to the essay entitled "An Essay on a New Method of Treating Ununited

Fractures and Certain Deformities of the Osseous System." The sealed envelope accompanying this essay was then broken and the author found to be Daniel Brainard, M.D., of Chicago. This essay appears in the *Transactions of the American Medical Association* for that year. It bore a motto in French of the sixteenth century from Ambroise Paré which, liberally rendered into modern English, reads: "And notwithstanding all the pains I have heretofore taken, I have reason to praise God in that it hath pleased Him to call me to that branch of medical practice, commonly called surgery, which can neither be bought by gold nor by silver, but by industry alone and long experience." The essay occupies forty-four pages of the *Transactions*, and is one of the classical medical articles of America. The object of the essay, as stated in the introduction, is: (1) To establish, by experiment, the principles on which the treatment of ununited fractures should be conducted, and to show that these principles are applicable to the human subject. (2) To propose a new method of treatment for certain deformities which result from true ankylosis, union of fractures in an angular position, rachitic curvature, etc. The article is thoroughly illustrated by nineteen copper plates designed from Nature.

Earlier in the year Dr. Brainard had published a similar article in French entitled "Mémoire sur le traitément des fractures non-réunies et des difformités des os," but this was less complete than the prize essay, and was distributed only to scientific societies and a few friends.

On the treatment of non-uniting fractures he said: "Without doubt the aim should be to place the old fracture in the condition of a simple and recent fracture without contusion and disorder of the soft parts. In oblique fractures I pierce the skin with an instrument (a perforator of my own invention) in a manner which will permit me to pierce the extremities of the fragments of bone, to freshen their surfaces, and pass through the tissues that are formed between them. After this first operation I disengage the instrument from the bone without taking it from the skin. I then change its direction and make a new perforation, and I repeat this as often as I judge necessary. In most cases it is preferable to commence by two or three perforations only, in order that effects produced may not be too energetic; on removing the instrument one will take care to apply collodion over the skin wound." In non-oblique fractures the technic was somewhat different. He says: "Division of the callus alone has little effect if the bony surfaces are not rasped at the same time, but I have demonstrated by experiment that if one makes several deep wounds in the bone, durable results will be obtained which will lead to a good result and put the fragments in favorable condition for reunion. After the operation it is necessary to apply splints or a convenient apparatus to immobilize the parts, and it will be necessary at times to make other punctures. In none of our experiments on dogs and rabbits have we produced necrosis, suppuration or intense inflammation. It shows us that the small parcels of bone left in place by the perforator do not suffice to produce suppuration, and far from retarding a cure, it is very probable that these small fragments acting as foreign bodies, which can

be absorbed or unite themselves to the bone, have a great influence on the result and success of the operation. These effects are so rapid that in the cases where I have employed my method, a week has never passed without a decisive amelioration. This has led me to believe that it is a good procedure to hasten the union of simple fractures as well as those which have been greatly retarded." Here follows citation of cases treated and cured by his method, followed by a chapter on subcutaneous perforation applied to the treatment of certain deformities, with copper plate illustrations.

These various activities gave Dr. Brainard an international reputation not only as a surgeon but as an investigator. In 1855 the chair of surgery in the University of Pennsylvania was vacant, due to the resignation of Professor Gibson. Dr. Brainard was a candidate for the appointment, and was the almost unanimous choice of the faculty and was by them recommended to the trustees. "Personal considerations, however, and other influences prevailed with the trustees rather than the wishes of the faculty," and Dr. Henry H. Smith of Philadelphia was elected professor of surgery.

In *The Illini* Clark E. Carr describes a trip during the Civil War on a river boat from Cairo to Savannah, where the wounded had been taken from Pittsburg Landing. He speaks of Dr. Brainard several times, once as follows: "At the head of the corps of surgeons was Dr. Daniel Brainard, the most eminent surgeon in Chicago."

In closing I wish again to quote from Dr. Brainard's words, which are as appropriate now as they were true when he spoke them to the graduating class of 1849. He said: "To you, young gentlemen, about to enter on the practical duties of life in a profession so useful, honorable and charitable as ours, life seems to present attractions not often found in similar circumstances. The field of usefulness is rich, vast as the ambition of man can desire. Your life, if you worthily follow your profession, is to be one of perpetual charity, of daily relief to suffering. . . . In proportion as you devote yourself to it will be the return you may expect to receive. Set your mark high. Fear no obstacles. . . . Whatever may be the result no pursuit is more worthy of occupying your lives than the acquisition of knowledge and its application to the relief of human suffering."

THE MENACE TO THE PUBLIC BY FEEBLE-MINDED PERSONS LIVING OUTSIDE INSTITUTIONS*

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At the government census of 1890 the number of feeble-minded was reported as 95,000, of whom only 5,200 were found in special institutions; and another 2,500 were in asylums for the insane. The number of feeble-

* Read before the Chicago Medical Society at its meeting of April 18, 1912, and before the Cleveland Academy of Medicine on April 19, 1912.

minded persons in the United States, that is those so pronouncedly feeble-minded as to stand in need of institutional treatment, was estimated in 1904 by John Koren, expert and special agent for the United States Census Bureau, at 150,000. Koren reports only about one-ninth of this whole number, or about 17,000, as residing in institutions especially intended for the feeble-minded. He further estimates that an additional 16,000 feeble-minded persons were inmates of almshouses. In round numbers then, according to this estimate, 33,000, or one-fifth of the entire number of feeble-minded persons in the United States, were found in institutions; and four-fifths, or 120,000, were living outside institutions in 1904. The number of feeble-minded in special institutions had grown from 5,000 in 1890, to 17,000 in 1904.

The following table taken from Koren's report indicates the total number of feeble-minded in institutions in 1904, and shows as well the number in the several states. It will be seen that the several states provide very differently for their feeble-minded and that many of them have not yet provided any special accommodations for them.

FEEBLE-MINDED IN INSTITUTIONS, 1904

State	Total Number	Enumerated Dec. 31,'04	Admitted 1904
Continental United States	16,946	14,347	2,599
North Atlantic division	6,651	5,699	952
New Hampshire	72	64	8
Massachusetts	995	878	117
Connecticut	262	219	43
New York	2,594	2,135	459
New Jersey	527	460	67
Pennsylvania	2,201	1,943	258
South Atlantic division	397	338	59
Maryland	156	162	14
Virginia	46	35	11
West Virginia	175	141	34
North Central division	8,859	7,459	1,400
Ohio	1,307	1,125	182
Indiana	1,118	1,036	82
Illinois	1,507	1,283	224
Michigan	657	516	141
Wisconsin	710	611	99
Minnesota	1,071	888	183
Iowa	1,152	981	171
Missouri	354	250	104
North Dakota	86	...	86
South Dakota	77	51	26
Nebraska	386	337	49
Kansas	434	381	53
South Central division	224	189	55
Kentucky	224	189	55
Western division	785	662	133
Colorado	33	14	19
Washington	124	81	43
California	638	567	71

Dr. Jos. Neff, Director of Department of Health at Philadelphia, has devoted much time and labor to investigation of the problem of the feeble-minded, especially as it presents itself in Pennsylvania, and has published several very valuable pamphlets on the subject to which I must refer. Dr. Neff estimates that there is one feeble-minded person to every 500 of population in Pennsylvania. The statistics of Tredgold for England indicate a much higher proportion of feeble-minded for that country.

In this estimate merely backward and deficient persons of types not greatly pronounced are not being considered. But enough has been said

to show that the vast majority, at least four-fifths of all pronouncedly feeble-minded persons in the United States, are living outside institutions; and of the other fifth only one-half of them are living in the proper kind of institutions, i. e., institutions especially equipped for the feeble-minded; and the other one-half are living in almshouses, which are not properly adapted for these individuals and where they cannot be properly protected. It is the chief object of this paper to call attention to the dangers and risks which society encounters by reason of the fact that the great majority of feeble-minded persons are living outside institutions and to advocate what appears to me as the proper remedy for this evil.

What are the dangers to the public from feeble-minded persons living outside institutions? These dangers are manifold and most of them very obvious. The first and most striking risk to society is the propagation of feeble-minded by individuals of their kind. I believe it is now so well established that the most conspicuous cause of feeble-mindedness is heredity that no argument need be used before this audience to support this proposition. The famous Jukes family with their long history of generations of feeble-mindedness, degeneracy, prostitution and criminality is well known. The recent work of Dr. H. H. Goddard, of the New Jersey Training School for Feeble-Minded Children at Vineland, N. J., shows in a clear and convincing way the terrible effects of heredity as the cause of feeble-mindedness—and that feeble-mindedness very often means vagrancy, degeneracy, prostitution and criminality.

Dr. Neff has shown that feeble-minded women in general are more prolific than normal women and that practically all of them become mothers soon after the age of puberty. To support his contention he has cited many illustrative cases.

Hence it becomes perfectly obvious that the greatest source of production of feeble-mindedness is propagation of the feeble-minded by the feeble-minded. Imbecility is never cured — once an imbecile, always an imbecile. Can it be prevented? It would appear clear that our only hope of reducing it must be in the prevention of it. And it would appear plain that if we can prevent the feeble-minded from propagating their kind we will do much — very much to prevent and decrease imbecility.

Can this be done? Should it be done? How can it be done? I propose to address myself to these questions. But before doing so I must point out other dangers to the public by reason of imbeciles residing in its midst, though they shrink into secondary consideration as compared to this first great danger which I have just indicated — that of propagation of their kind.

While many feeble-minded persons are regarded as harmless aside from the danger of begetting offspring, it must be remembered that probably the majority of them possess more or less degenerate instincts and are capable of committing murder, arson, rape and other serious crimes. Moreover, the great majority of them are inadequately cared for and others are ill treated or abused in various ways.

What should be done with this terrible problem of the feeble-minded before us? We have seen that the capacity of specially adapted institu-

tions for the feeble-minded grew from 5,000 in 1890, to 17,000 in 1904; so it would appear that the need of these special institutions is being more commonly and generally recognized. And the good that they have done and are doing becomes obvious to those who have visited them. I can speak very strongly for The Institution for Feeble-Minded at Polk, Pa., which, through the courtesy of Dr. J. Moorhead Murdoch, the superintendent, I have several times visited. In such institutions the conditions for the feeble-minded are ideal. But it is seen that the various states have inadequate — often pitifully inadequate—accommodations for the feeble-minded. What shall be done?

I would advocate that the several states shall as speedily as possible possess themselves of adequate accommodations for feeble-minded persons within their borders. But as a preliminary step to this end, I would advocate that each state ascertain the name and address of all feeble-minded persons residing within its borders. Diligent search over two or three years would probably bring out a fairly complete list of feeble-minded persons. For we must remember, "once feeble-minded, always feeble-minded." And the obviously feeble-minded which is now considered could with a little pains and industry be ascertained. And then I would have the law so shaped that the state, through a proper board and executive officer, should determine the question as to whether a particular feeble-minded person should be allowed to remain at home or whether he should go to an institution, subject of course to the limitation of accommodations. At present in the state of Pennsylvania (and I presume it is likely the case in other states) the question of whether a feeble-minded person shall go to an institution or not, or if already there, as to whether or not he shall remain there, is in the hands of the parents of such a person—the very individuals who are least competent to decide it rightly. I have had numerous experiences where I have strongly advised that a feeble-minded child be sent to the institution at Polk for the good of the child, for the good of the parent and for the good of the public, and where the parents have declined to take the step. Also I have had the experience of seeing feeble-minded persons taken to an institution and brought away from it against the advice of the superintendent and of myself. In short, this very important and fundamental question of admission and discharge from institutions for the feeble-minded is decided by the parents of the feeble-minded; and the institution or the family physician has only advisory powers. This is obviously and radically wrong and should be corrected; it could be corrected if the state made a census of all feeble-minded and for the good of its citizens took authority to send any feeble-minded child to the proper institution and compelled him to stay there until it saw fit to release him. All this is only right and proper; and if the state wishes to protect itself from the propagation of imbeciles by imbeciles and from the dangers of arson, rape and other crimes, and if the feeble-minded persons are to be protected from neglect, cruelty and abuse, such measures as I have indicated must, I believe, be taken.

All this means a great undertaking as I am well aware. But surely it is best to face this great problem fairly and squarely as it exists before us. Other questions come up in connection with this question. As for example, whether sterilization of feeble-minded men and women is right and proper and expedient. This thing might be done and might have its proper place in a comprehensive state law; but I regard it as secondary in importance, but if needful it too should be employed. No imbecile woman of child-bearing age should be allowed to live outside an institution unless she is sterile.

To reiterate, I believe that the state should make as complete a census of the feeble-minded within its borders as possible and say which feeble-minded persons shall be in institutions and which shall be allowed to remain at home and shall have power to keep those already in institutions in them as long as it may deem it best for the public and the imbeciles concerned. And should sterilization be found necessary to prevent propagation of imbeciles, the state should not hesitate to use it.

BORDER-LINE INFERIORITY *

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Since the world began Nature has been making "mistakes," has very frequently failed to reproduce the highest type, and especially is this true of her most specialized product, man. The evidences of this failure are physical, mental and moral. When the failure is practically complete the result is perfectly apparent — a monster or a blithering idiot, and from these forms, range upwards idiots of a thousand varying degrees, each one bearing a number of more or less evident physical stigmata, such as: Disorders of one or more of the cranial nerves; residuals more or less marked of focal brain lesions such as spasticities, pareses, athetoses, incoordinations; increased hairiness either of the entire body or in localized areas; asymmetrical developments; malformations such as deformed ears, high arched palates, receding foreheads and chins, deformed extremities, etc.

In all these subjects rather superficial examination brings out quite well marked intellectual defect; that is, it establishes a mental deficiency in one or more fields, which deficiency depends on anatomic defects, gross or minute, of the central nervous system and evidences itself in difficulties of perception, failures of mental elaboration, etc. Sensory stimuli are poorly transmitted, and more than this they do not give rise to what we commonly speak of as extended trains of thought. Necessarily with this dearth of mental activity a more or less vegetative existence ensues, though by dint of training, a number of pathways may be opened up along which

* Read in a symposium on Mental Diseases at Hotel La Salle, Chicago, April 18, 1912.

mental activity may travel in a routine manner; and indeed, by virtue of inherent adaptability some such reactions in certain individuals may even acquire an almost uncanny facility — as witness those wise fools who do enormous sums in mental arithmetic, repeat musical melodies by ear with the certainty of a phonograph, or give accurate data from memory concerning an incredible number of famous people. Prodigies these subjects may be counted, but still they remain essentially fools because their knowledge is useless in that there is with it no productiveness, no spontaneity. For this reason these individuals must forever remain to one side, if not actually outside, of the activity of normal endeavor, capable of a certain amount of education, very often self-supporting, but always in a sense, dependants, because they lack initiative and hence must look to others for guidance.

Next higher in mentality than the idiot, as ordinarily reckoned, is the imbecile, who possesses a fertility of resource and spontaneity of action not found in the grosser defectives. Generally speaking, imbecility is counted as covering the ground between idiocy and the normal, although those who deal with deficient children quite widely recognize an arbitrary group of so-called *Morons*, situated between the imbecile and normal individuals.

Sollier, French writer, has sought, however, to establish the imbecile on a separate footing from the idiot, basing his differentiation on the contention that there exists in this group of defectives a qualitative defect rather than the quantitative one found in the idiot. That is, while in the individual I have previously described as an idiot there is a failure of mental activity more or less marked because of some structural defect of the nervous system which prevents the proper transmission and assimilation of stimuli, an end result often quite similar in appearance is brought about in quite another group of defectives by what this writer terms, *"a primary instability of attention."* These individuals do not pay attention to any one thing for a length of time sufficient to insure the proper assimilation of perceptions and the production of an interaction of higher centers, or what we commonly speak of as reflection, logical thought, etc. This instability of attention naturally results in disordered conduct, because a shifting interest of varying quality and quantity renders the individual's conduct unreliable, inconsistent and unproductive.

On the appearance of a great comet in the skies the savage gives offering to placate a vengeful demon, the philosopher weighs the head and measures the tail, while the saint meditates on the glory of God thus revealed. All react in the light of their training with a certainty that marks them as dependable men, and it is thus that we establish the so-called "normal." It is what can be counted on in the great majority of cases that fixes the norm. The ignoramus, the savant and the religionist all react in totally different ways, but each, as it were, runs true to form. Certain stimuli can be counted on to produce in each one of them practically the same effect as in the remainder of his kind living in a similar environment. The quality and quantity of their interest

remains on the whole fairly constant. By virtue of heredity and training the primal instincts of reproduction, self-preservation and hunger have been so shaped as to form a mold, that while elastic to a certain degree, still gives to whatever is poured into it a recognizable form, which form is similar in its general contour to the composite impress of the great majority of all individuals existing under similar conditions.

In his "imbecilic" group Sollier designates the defect as qualitative, in contra-distinction to the quantitative defect occurring in idiots. Roughly speaking, this means that a high-grade imbecile may, at different times, react normally to almost any sort of stimulus, but that to any one stimulus he may and does react in many different ways at different times, so that his conduct as a whole is quite lacking in that dependability which has been pointed to as an indicator of normality. In this regard his conduct is vastly different from that of a high-grade idiot, which may, on the whole, be fully as consistent as that of the so-called normal individual, but fails of the normal standard because of the absence of an ordinary degree of perception and subsequent mental elaboration. Both of these defective types fail to exhibit what is ordinarily called good judgment or common sense — the imbecile because his interest is shifting and undependable — the idiot because anatomic defects in his nervous system prevent the complete carrying out of mental processes.

I realize that the above views are not agreed with by very excellent psychologists who have to deal with defective children, because the distinction is by no means always clean cut, in fact is not always possible, and is not always necessary for purposes of instruction; but I do believe the principle holds in the higher so-called moron type, and it is in the twilight zone where these approach the normal, that we not infrequently meet with an imbecile type so obscure as to seemingly render the bald term of imbecile inapt.

There is probably no good reason why the term *degenerate* should not be more widely used in connection with these individuals, save that by it we have commonly come to understand a more or less well marked throw-back in the shape of conduct or tendencies quite anti-social: to-wit, sexual offenses, kleptomania, habitual offending, etc. By the term "higher degenerate," Magnan, the French author, understands an individual who though as a whole subnormal, may grade even above the normal in some ways. "In him," as this writer so well expresses it, "the higher faculties have acquired a greater development than in the ordinary degenerate, but the bizarre and multiple adaptation of these faculties at the same time reveals their development to be unequal, thus constituting a veritable functional disorder. His abilities, powerful as they are, remain practically useless because he has not the power to orient and co-ordinate them. His thoughts and acts are in constant antithesis, the man of to-day is not the one of yesterday. Always there is a lack of logic, an absence of continuity. Reasoning the most irreproachable results in action the most incoherent; pettiness of final decisions effaces the grandeur of conceptions. Always vacillating and without plausible motive, the unstable individual, on the contrary, astonishes one at times

by an obstinacy which nothing daunts; one beholds the most resolute action abruptly arising from the most vague sort of thinking.

"In fact, one often meets with an extraordinary fecundity of imagination, but no less there exists with this, an oddly restricted thinking. Along with transcendant conceptions one finds infamous preoccupations — moral theories the most sincere contrasting with the acts of absolute immorality; and thus, in spite of his intellectual development, the degenerate must ever be the prey of his passions, of instinctive impulse the most gross, which he cannot master."

In this clever characterization of Magnan's note stress is laid on the lack of proper adaptation to circumstances due to a lack of coordination of mental abilities which may be normal or even above normal in themselves. How this occurs in imbecilies where interest is an uncertain quantity, I have already endeavored to point out.

We look for genius to be eccentric, in fact, we rather expect to find a great man weak in many ways, or very weak in some one way. In fact in men of genius an imbecilic symptom complex can often be traced in the disordered manner in which life is carried on — save in the one direction where interest is most constant and ability supranormal. Save along this line there is not infrequently an utter incongruity and inconsequentiality of thought and action well illustrated in their profound egotism, ethical deficiences, absurd eccentricities, emotional instability with consequent erratic behavior and tantrums, poor judgment and periods of great excitement and productiveness alternating with periods of apathy and depression in which nothing is accomplished, etc., etc.

Grassett, in writing on the "semi-insane," has pitilessly laid bare the queer stuff of which so many of our great men have been made. Of some of these strange agglomerations it has been wittily said that while they may be cracked, still the crack has let the light in, a clever saying, indeed, but implying that they have suffered an *accident*, whereas it is generally the case that their brilliancy is *incident* to careers essentially imbecilic in much of their detail.

Thus far this brief and superficial survey of the realm of mental defection I trust has made it evident that while we may not always find startling physical stigmata, certain mental and moral deficiencies are characteristic of inferiority and deserve serious consideration, not only in dealing with individuals who commit crime or become unbalanced, but with those one meets in every community and in all walks of life. In every-day life we come in contact with individuals to whom we pay little or no attention until some fine day they do something strange, react to stress and strain in an extraordinary manner, when beneath the cracked veneer of the apparently normal there is suddenly revealed to our more painstaking examination a structure so frail that we wonder it has been able to bear the load as long as it has. These individuals have been born inferior and up to a certain point have been able to get along fairly well by virtue of favoring circumstances, or in the absence of markedly deleterious influences. When, however, the sudden strain comes, or the long continued wear, they are unable to endure and break into an acute

psychosis, or sag into a line of conduct so foreign to that of their previous selves as virtually to constitute a psychosis.

The following case illustrates rather well the imbecilic type that is yet so far removed from what we ordinarily think of as imbecility as to better cause it to be termed *inferiority*.

The patient, B. F., is a single young woman, aged 26 years, with an insane aunt, otherwise no family taint. Suffered scarlet fever at five with no apparent effects, attended school from 6 to 18, went through high school and was said to be very bright, but peculiar and irritable. After graduating from school she taught for three years, but told such lies about her girl friends as to cause them to avoid her, struck her mother on several occasions because she would not buy clothing that the patient wanted, ran her father into debt for finery and stole and misappropriated money for this same reason. She enjoyed music but made no determined effort to study it, did not go with young men to any marked extent, was inclined to be idle and finally stopped teaching saying that she was too good for such work and wished to travel. Later when offered a position at a good salary she made all the arrangements and drove out to the school but passed by it and came home again, saying that she did not wish to teach and was rusty in her work, after which she continued to buy much stuff she did not use and had at one time thirteen dress patterns not made up, and the same number of skirts which she did not wear.

In February, 1910, the patient left home in the night and was found in the morning in the snow, explaining that she wanted to show people how badly she was mistreated by her family. She became gradually worse and at times would lie about on the floor, or go to bed without undressing, cried much and again would laugh easily, did not go out of doors except in street cars, told many strange stories, was entirely idle, spent considerable time in her darkened room, gave away a fine fur coat and a watch, threatened to break up the home, and even suggested that she was not really her father's own daughter.

In April, 1911, she was brought to the hospital where a physical examination showed no histerical stigmata save constricted fields of vision. She was at first tearful, complaining and non-cooperative, but a little later became quite complacent, rapidly adjusting herself to ward routine. She betrayed no delusions and no hallucinations. Examination of the intellectual field revealed no deficiency save that her school knowledge as a whole seemed superficial. Rapidly she become apparently quite normal, wrote many letters, spoke of herself as having been hysterical and as having regained her "will power," continued to lay stress upon her good family, desired a private attendant, wished to travel when she left the hospital, etc. Slowly she gained in weight, becoming an excellent helper on the ward, seemed to desire to go home and laughed at the thought of not being her father's daughter.

It would seem that the patient might go home at the present time, but her father hesitates in view of his former bitter experience with her. She presents certain hysterical-like characteristics, but practically none of the major diagnostic phenomena, mental or physical, of that disorder. On the other hand, note the imbecilic traits so prominent in her general degradation before admission to the institution, to-wit: extreme selfishness, vanity, superficiality of thought and emotion, fabrication, idleness, irritability and emotional instability. The interesting feature of the case is the utter breaking down of the entire personality, illustrating the inability of a constitutionally defective individual to play the game of life according to the ordinary rules of the game. There is not so much an actual psychosis here as a sinking of the whole personality deeper and

deeper into the quicksands of oddity from which the support of hospital discipline seems to draw her quite easily back to the level of her normal.

Again, note the case of M. S., a married woman, aged 35 years, whose mother died of "brain fever" after twenty-five years of invalidism, and whose father died of paresis. The first five children of this union died shortly after birth; the patient is the sixth, having one younger sister. She is said always to have been emotional and a lover of beauty but difficult to control and lacking in application, full of fun and fond of showing off, selfish in her general lack of consideration for others, but sporadically and unwisely generous. She was courted four years and finally married almost against her will, adapted herself poorly to the marital relationship, did not seem to desire children and when they came cared for them in a haphazard fashion though seeming to love them, and was much given to "nervousness."

Gradually she grew careless of her personal appearance, did not bathe properly, became subject to attacks of anger and even violence toward her husband and sister, following these spells with excessive repentance; showed some press of activity in writing long letters, visiting much, playing the piano loudly, and sleeping poorly. This alteration or degeneration of personality has come on gradually in the last six years, becoming worse the last year or two. A rest cure in a private sanitarium availed little and she was finally brought to the State Hospital in April, 1911, where she has shown herself bright and quite capable, a fluent talker, a water-colorist of no mean ability, always quietly indignant over detention here, and eager to talk volubly to any listener but always telling the same story in pretty much the same words.

In this case manic depressive insanity is to be considered, but a hypomanic state of six years' duration is rather difficult to conceive, and the entire picture seems better described by the term instability or high-grade imbecility with a manic temperment. The patient has been incapable of adjustment to the load of responsible wife- and motherhood. Childhood traits persist and in comparison with what we expect in a woman of 35, stand out so glaringly as to imitate a veritable psychosis. Imbecilic characteristics are fairly evident, namely: egotism, the love of display, emotional instability, superficial brightness of intellect and a lack of application, together with a resultant inability to make normal adjustments.

One more illustration of the subnormal type of individual with whom it is often a toss-up as to whether he goes to the penitentiary or to a hospital for the insane.

Family history negative, patient 30 years old, a farmer, married, with several children. As a child he was wilful and selfish, became easily angry and was rather cruel toward animals, went through two years of high-school and was said to be bright, especially in mathematics. Until 19 he worked on a farm with his father, then when his father died, worked there for his mother. Married at the age of 23, and continued on the farm, but is said never to have been a good farmer; husked his corn before it was ripe, bought an automobile for $1,000, leaving his sister to take care of the interest for what he owed on the farm, was careless with guns and a reckless automobile driver. During the year previous to his admission to the hospital he became more difficult to deal with, swore much, talked loudly, purchased more farm implements than was necessary, etc.

Occasion for sending him to the hospital rose out of his threatened arrest for stealing automobile tires. To pay for these he gave a check for more money than he had in the bank and became much alarmed over the punishment with

which he was threatened. He was arrested and indicted before the grand jury, but the neighbors became convinced that he was not wholly responsible and at the trial induced the judge by their evidence of patient's former behavior to send him to the State Hospital as a mittimus case.

Physical examination upon admission was practically negative, no stigmata pointing to idiocy. He was rather boisterous, talkative, and somewhat difficult to get along with, cried freely at times, and again was quite sullen. He did not appear to regret his connection with the theft of the tires and once even said he regretted not stealing more of them. The incident of the theft appeared even to raise him in his own self esteem. For a time he continued to be irritable and dissatisfied, surly and solitary, gradually, however, becoming more tractable and sociable until a few months later he was given ground parole and put to work upon the farm where he worked well and from which he was finally paroled; seemingly in his normal mental condition. A letter received a short time ago stated that he was working hard in an automobile factory.

This man, you will note, is said to be good in mathematics, and to have had "a craze" at different times for guns, bicycles and automobiles. He was apparently something of a mechanic, and if this aptitude were increased a few fold we would have the picture of a talented imbecile, a man with a special aptitude in one direction, but lacking balance in all others. Selfish, improvident, easily led astray and unable to bear the burden of responsible manhood, he is lacking in dependability and in a crisis fails to react normally, suffering an exaggeration of characteristics which have been normal to him from childhood up. Without the intervention of friends he might easily have been sent to the penitentiary, although he actually presented the picture of an inferior individual sagging under stress and strain inadequate to produce any such result in a normal individual. The psychosis is indescribable and can well be termed an episode in the life of one who is constitutionally subnormal.

Similar to the above, I have no doubt but that in this one state thousands of histories of young offenders, male and female, might be written. Unfortunately for him perhaps, the high-grade subnormal individual does not always break or sag into an apparent psychosis similar to that of the last history noted. Too often it is merely into crime, or what is accounted as such in the absence of proof satisfactory enough to relieve him of responsibility. Among the young the Juvenile Courts are attempting to deal with the problem from a psychologic standpoint, and in Chicago the Juvenile Psychopathic Institute is attempting to classify young delinquents according to ingenious tests which well deserve the attention of the general practitioner as well as the specialist.

Everywhere there is an increasing tendency on the part of our County Courts to consider these unfortunates, young or old, as deserving treatment rather than punishment, and it behooves the physician to take the front in this movement. Very probably some responsible criminals may, as a result, find easy berths, but this is better practice than to send hundreds of inferiors to jail or prison because of acts for which they are at the best but partially responsible.

Inside the state hospitals it is comparatively easy to pick out those patients whose "insanity" is not so much a distinct entity as it is a logical continuation, albeit exaggerated, of their illogical thought and

conduct before admission; but the proper place where first to recognize and to deal with these individuals—a small proportion of whom reach the hospitals at all—is upon the outside. *And first of all they must be recognized.*

THE SEGREGATION AND TREATMENT OF THE FEEBLE-MINDED *

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In every department of medical science we are confronted with serious intricate pathologic problems, both of a special and general character. These can only be solved by an intelligent understanding of their peculiar nature, underlying cause and mode of development, together with the application of wise appropriate means and measures for their relief and prevention.

The study of the pathogenesis and propagation of many such, as well as the recommendation of suitable methods for their amelioration, appeals by their medical character more especially to the votaries of medical science for their just, humane and adequate disposition. Among such problems propounded to the medical profession is that which deals with the appropriate care, management and treatment of the feeble-minded. While strictly technically speaking the feeble-minded belong to the class of degenerates who enter life with a mental disorder or handicap which is not merely potential but actual, yet all arrests of development are not diseases but infirmities and are therefore subject to modification and educational treatment. It is therefore of primary importance that we define what is implied in the term feeble-mindedness, for it is so often confounded with other terms such as idiocy, imbecility, dementia præcox and similar states which are grossly misleading. According to the French psychiatrist, De Fursac, two kinds of arrests are distinguished: (1) a general arrest involving all the psychic functions, which include three degrees recognized as idiocy, imbecility and feeble-mindedness; (2) an arrest of development which is almost wholly limited to the moral sphere constituting moral imbecility or moral insanity.

Dr. Maurice Craig, the noted English psychiatrist, states in his recent work on psychologic medicine that "idiocy and imbecility are almost synonymous terms, for they differ only in denoting the degree of mental enfeeblement, while the feeble-minded belong to a class by themselves, as the intellectual development of these are on a higher level and capable of acquiring knowledge sufficient to be self-supporting."

Dr. William White of the Government Insane Hospital, Washington, D. C., sets forth in his "Outlines of Psychiatry" the following definitions: "Idiocy is a condition of profound mental defectiveness, the lower grades being unteachable, while the higher grades may be trained slightly in self help, viz., to attend the calls of Nature and feed and dress themselves.

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* Read in a Symposium on Mental Diseases at Hotel La Salle, Chicago, April 18, 1912.

Imbecility is a condition of mental deficiency which can be materially improved by training but not sufficient for the subject to take a place in the world. Another form known as moral imbecility is a condition of mental defectiveness which is shown in the absence of the higher functions, particularly the moral, capable of training to a considerable degree, but always a menace to society. Feeble-mindedness, however, is a condition of slight mental defectiveness capable of much improvement by educational methods. The afflicted individual may ultimately take a place in the world and be self-supporting under favorable circumstances."

A recent article by Dr. Charles B. Davenport in the *Popular Science Monthly* defines feeble-minded persons as "those who lack one or more mental traits that are socially important, and that these exist in all degrees, and that, while they may occur isolated, yet it is the multidefective mental traits which constitute the main problem of the feeble-minded or those who are socially inadequate." Commenting on this article of Davenport *The Journal A. M. A.* in a recent editorial declares that among the well-known defects possessed by many individuals are word blindness, figure blindness, color blindness, number defectiveness, memory defectiveness, moral defectiveness, and that these defects are in general hereditary and the result of corresponding defects in the germ-plasm of the parents. If both parents be mental defectives, the combination of the germ cells will almost certainly result in a feeble-minded child. Defects in Davenport's belief are not a pathologic condition, but are merely deviations from the normal conditions of the adult; and from this point of view feeble-mindedness is simply an uninterrupted transmission from our animal ancestors. It is not reversion, but it is direct inheritance with failure to develop beyond it. Feeble-mindedness, according to this author, therefore consists in an aggregation of the defective mental traits, or failure of development of certain socially important qualities which render the individual socially inadequate.

Thus it would appear that a consensus of medical opinion by those competent to judge favors the view that there is an ascending scale of mental growth and retardation beginning at idiocy, which represents the lowest type and who are devoid of all attributes which go to form mind, thence imbecility where we reach the rudimentary intellect, although at times wholly devoid of moral sense; while a still higher step brings us to the so-called feeble-minded in whose mental organization there are also defects covering at times wide areas, but whose mental capacity to acquire knowledge and to benefit by education is larger than that possessed by either the idiot or the imbecile.

Moreover, the term dementia præcox is so often misapplied that we find it to mean by many any morbid mental weakness or enfeeblement which occurs during childhood or the period of adolescence. Its scientific application, however, should be reserved only for those whose mental disorder actually demonstrates progressive dementia. This confusion of terms and their lack of scientific interpretation is undoubtedly responsible for much disorder in classification of the different pathologic

conditions found in our eleemosynary and penal institutions and more especially is this true when applied to our state homes for the feeble-minded.

As an illustration, much as I regret to parade our own shortcomings as it now stands, the only state provision made for the mentally defective child in Missouri is the Home for the Feeble-Minded at Marshall, Mo. Into this is necessarily dumped the epileptic, the idiot, all grades of imbecility and dementia præcox, besides juvenile incurable insane conditions. Such a mixed environment as this, however classed or modified, cannot fail to prove not only a great hardship, but absolutely harmful to many children who are justly entitled to better state provision.

Moreover, it practically bars from entrance all those who are found suffering from lesser degrees of mental defects, for it would scarcely be just to place certain of the higher grades of feeble-minded children in such environment, yet at the present time it is the only refuge we have for such poor unfortunates. It is conservatively estimated that there are at the present time no less than 7,000 feeble-minded persons in the state of Missouri and only 400 of these are now under state custodial care. In addition to their other mental defects of the 400 inmates at Marshall, no less than 114 of them suffer from epilepsy, while the rest present the more serious degrees of idiocy, imbecility and similar mental states. Notwithstanding the fact that there is a large number of feeble-minded children waiting for admission the institution cannot receive them for lack of room. Nor is this unfortunate condition any reflection on the medical staff or its officers, for they undoubtedly feel keenly this great omission of the state and do the best they can with what they have, all being handicapped more or less by politics, yet they would willingly change their present deplorable dumping method if possible as they must realize that it is contrary to all modern medical scientific teaching and treatment.

Those, however, who are inclined to condemn such practice in Missouri and censure its methods would do well before doing so to find out something about their own state and its provision for the feeble-minded, for it will be found that in but very few states of the Union are conditions any better and in some they are even worse. What is urgently needed therefore is not only better provision for the feeble-minded, but a more practical scientific classification and treatment of its various mental defects, including wise and judicious means of segregation.

Every physician of experience is familiar with the so-called feeble-minded boy or girl brought to his office for advice and treatment. In its crude form it presents itself in two extremes, the idiot or dullard, and the mentally precocious child or prodigy. Between these two widely divergent conditions are children of both sexes, all ages and classes of society, presenting all the varying degrees of feeble-mindedness. Some of them are found manifesting their neuropsychopathic weakness from birth, while others postpone its active manifestation until puberty, adolescence or the educational period when they begin to lose interest in their studies, their home, parents, friends, besides becoming careless and indif-

ferent toward themselves concerning their appearance, clothing and habits. Moreover, many become morose, sullen, stubborn and indulge in various kinds of dissipation. Others may present an opposite clinical picture in becoming hilarious, talkative, act foolish, talk loudly without adequate cause, turn against their parents and become incorrigible or wayward with a marked tendency to become vicious and even to commit crime. Hence the former lad of fine promise now becomes a dismal failure, while the precocious girl, once the idol of her parents for her quick intellectual resource, now appears a prattling child and a bitter disappointment.

Such persons are often found in our public schools contaminating the rest of the school children by their lack of attention, psychic insufficiency, moral indifference and uncontrollable impulses, but because of their parents' pride, indifference, financial and social standing or political pull, their feeble-minded child is allowed to stay in school and mix with the other pupils to the detriment of all parties concerned. Many such are referred to the family physician for relief, but what to do for them at once propounds the most difficult medical, legal, sociologic problem of this age, because of the serious lack of state or civic provision, as well as the legal complications involved in enforcing their appropriate custody and control. Many parents refuse absolutely to cooperate with the authorities, hence a large number of such defective children are forced back on society and allowed to go more or less unrestrained, as well as unprotected.

All medical authorities, however, agree that because of their congenital or inherited defects, the feeble-minded child easily becomes addicted to all kinds of vice, crime and the worse forms of degradation. Moreover, independent of their purely feeble-minded state, many are found suffering from serious anatomic stigmata of degeneration, and somatic and psychic complications like epilepsy, syphilis, paralysis, moral impulsions, besetments, sexual perversions and all degrees of malnutrition due to the defects of development and a lowered resistance of the organism. These inherent defects and deformities also favor the development of misdemeanors and moral practices, which lead the feeble-minded quite often to be referred to the policeman, lawyer and the courts for treatment, rather than the doctor. And even where there is no criminal involvement the necessity for their absolute control in special schools or homes is so apparent that in spite of the legal complications they are often robbed of the medical care their condition so justly demands. What therefore is primarily a medical question often becomes of necessity a purely legal one; consequently the care and treatment of the feeble-minded is more often made penal in character than medically pedagogic, for the jail and the reformatory are necessarily substituted for the feeble-minded school, home or hospital. This also explains the origin and purpose of the juvenile court, for the large majority of the youthful offenders are found to be victims of parental neglect, inherited defects and conditions and circumstances which breed, develop and propagate the morbid condition which constitutes feeble-mindedness.

To substantiate this claim, your attention is directed to a recent report issued by Wentworth E. Griffin, chief of police of my own city, Kansas

City, Mo., in which he claims that last year within six months' time no less than 2,480 juveniles were arrested charged with crimes ranging from vagrancy to murder and that the majority of these boys and girls were not normal children but degenerates which required medical rather than penal treatment. "Boys and girls," says he, "should not receive correction in the city jails, the workhouse or reformatories. These should be the last resort. To correct a boy you must have an idea of his mental processes. It is natural that the parents understand something of the child and use that knowledge to make a good boy out of him. Certainly it cannot be done in the reformatories, for although the authorities there are competent, they are hardly medical psychologists. In my opinion if any progress is to be made it is the parent and the doctor that must do the work, not the police and the various courts."

That our chief of police deserves credit not only for publishing this report, but also for the advanced position he takes in recognizing the appropriate care and treatment of the juvenile offender is certain, for he understands the fact that the parents are often the chief offenders in their child's delinquency and that medical rather than penal treatment is more often indicated than is at present allowed or practiced.

When we come to inquire into the causes of feeble-mindedness, alcoholic heredity, syphilitic heredity and consanguineous marriages are found to be the chief etiologic factors. Bourneville claims that 48 per cent. of the idiots and imbeciles are the offspring of alcoholic parents, while syphilitic heredity may act in two ways: either in giving rise to a congenital anomaly through intra-uterine disorders, or by causing the appearance of meningeal and cerebral lesions during the first months of life, of which the arrest of development is the consequence. So far as consanguinity is concerned all authorities agree that the marriage of first cousins is attended with a great degree of risk to the offspring, more especially if in both families the stock is markedly degenerate. Acute and chronic diseases in the parents, fright, shock, injuries, parental neglect, faulty education, poverty, malnutrition, social dissipation and lack of proper control are all well-known factors in the production of feeble-mindedness.

In the diagnosis and treatment of arrests of development the physician is therefore called on not only to differentiate them from states of acquired mental deterioration, but also that of detecting high degrees of feeble-mindedness approaching the normal, beside determining in a given case the degree of mental defect present and its appropriate treatment. For such purposes a system of tests constituting a measuring scale of intelligence has been recently devised by Binet and Simon. These tests have been applied to normal children of various ages and have thus been standardized so that it is now possible by means of them to estimate the degrees of mental development of any subject in terms of the age at which such development corresponds to the normal average. The authors of these tests have taken special pains to eliminate the disturbing influences of education, having made it their aim to devise a measure of natural mental capacity and not of degree of training. It is said that in practice one finds a good deal of irregularity in the results of the tests as children

frequently respond to some tests of a higher age and fail to do so to some tests of a lower age. This led to the adoption by Binet of the following rules: (1) The mental development of a subject is rated at the highest age in the tests of which he has succeeded with not more than one exception. (2) For every five tests passed above the age level as determined by the first rule one year is added. Hence in interpreting the results of these tests one must constantly bear in mind the great difference which exists between normal subjects in rate and degree of mental development. A variation of one or even two years from the age level of intelligence as estimated by these standards is by no means to be regarded as necessarily pathologic, but departure of three years or more below these standards is of course of great significance from the pathologic standpoint.

It is also claimed by these authorities that the average child of 3 years will repeat a sentence of six syllables but not of ten. At 6 years all normal children can repeat a sentence of sixteen syllables, while at 12 years a normal child should be able to repeat a sentence of twenty-six syllables. The test is passed only when the sentences are repeated without a single error.

In the United States, where the problem of preventing the immigration of mental defectives is one of great and growing importance, this measuring scale of intelligence should be of great practical service. Moreover, as a guide in the medico-pedagogic treatment of the feeble-minded as well as in determining the degree of responsibility in criminal cases, it should be of great value.

In the treatment of the feeble-minded all physical defects, reflex irritations and peripheral as well as functional disturbances should be recognized and receive appropriate treatment. These include a large class of local conditions such as eye, ear, nose, throat and dental defects, as well as complications such as tuberculosis, rickets, syphilis and general malnutrition, all of which require both medical and surgical attention. Moreover, in addition, the feeble-minded should be segregated and placed in special classes or agricultural colonies and graded as to fitness of capacity to acquire knowledge and furnished suitable employment.

Such segregation of the feeble-minded is advocated by medical authority the world over, and when this is done they can be made under appropriate medico-pedagogic treatment to become largely self-supporting citizens. As an economical as well as a humane measure the various states of the Union can well afford to make such provision more especially for the large body of feeble-minded who are now without any medical care whatever. Moreover, where it is possible, laws prohibiting the marriage of such as well as all other defectives should be passed and enforced.

This preventive measure has already been done in a few states of the Union with good results, but where this is not possible measures for the prevention of conception by such defectives have been devised and advocated as a means of preventing additions to their ranks. For this purpose sterilization by vasectomy or salpingectomy as well as castration is recommended. In the state of Indiana, for instance, laws have been enacted providing for the sterilization of defectives and criminals, and a report

of 456 cases of vasectomy performed in compliance with the law at the Indiana Reformatory has been published.

In other states, particularly Illinois, the same measure is advocated, and while we perhaps in Missouri are not quite as progressive, yet we believe that the time is not far distant when our statesmen and legislators will realize the necessity of doing something more than is now being done toward furnishing appropriate care, management and treatment of its feeble-minded as well as devise more adequate means and measures for the prevention of its delinquent, dependent and defective classes.

THE FEEBLE-MINDED AND EPILEPTIC*

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While the subject assigned me — "The Feeble-Minded and Epileptic" — has rather a large scope, I shall endeavor to cover some points in a more particular manner than others.

In the first place, I wish to call attention to the increasing number of these unfortunate classes of humanity. It is estimated that in the state of Pennsylvania there are to-day 18,000 feeble-minded and epileptic individuals aside from those receiving institutional care, and this number is increasing at the rate of from 500 to 600 per annum.

In the so-called ungraded classes of the New York City schools, they are caring for some 2,000 feeble-minded children, and this number is increasing rapidly. I have no doubt that other states show the same proportionate increase in the number of these individuals, as well as practically the same proportion who are not being cared for.

It was estimated some ten years ago that the feeble-minded and epileptic comprised 0.5 per cent. of the total population. To-day conservative estimators say that they have increased to from 3 to 4 per cent.

A number of investigators have advanced the theory that this increase was due to the great influx of immigrants. Other investigators have stated that a larger percentage of feeble-minded persons existed in the rural communities. I do not believe that either one of these theories is correct. I can find no statistics which show that immigration has increased 800 per cent. in the last decade. But the feeble-minded and epileptic have. Consequently immigration cannot be assigned wholly as the cause for this increase.

From personal experience and from studying the number of school children in our rural districts, both in my own state and others, I do not find that there is near the percentage of the feeble-minded and epileptic in the farming communities that there is in the cities.

There are a number of fine-spun theories advanced concerning this increase, but I do not care to burden you with them, as they really are

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of very little importance. The main question is to recognize the seriousness of the situation; that this increase is a fact, and that it is constantly progressing.

The recognition of this fact confronts us with the question: "What is the remedy?" It is a well-recognized fact that there is no other condition more clearly traceable to heredity than these two conditions — feeble-mindedness and epilepsy. All investigators state that the offspring of a feeble-minded father and feeble-minded mother must necessarily, in all cases, be feeble-minded. I would go still further than this and state that the offspring of any feeble-minded person, whether he or she be mated with a normal individual or not, is mentally below par. While in a number of cases they may be able to pass muster and escape being classified as feeble-minded, they, nevertheless, on close scientific examination, show various marks of mental non-development. This being the case, what is to be done in order to protect the future generations of mankind, as well as to better the conditions as they exist to-day?

Restriction of marriage, and the compelling of each person who applies for a marriage license to show an absolutely clean bill of health, not only as regards physical conditions, syphilis and venereal disorders, but an absence of any inherited mental taint, feeble-mindedness, epilepsy, insanity, criminality, etc.

The objectors to this method of procedure claim that it is not the proper thing to do; that it is restricting the liberty of the person; that it is unconstitutional.

A number of the governments of the world, as well as individual states of our United States, have passed stringent laws, and are carrying them into effect, regarding the propagation of animal and plant life. The individual who wishes to propagate nursery stock must receive from his state board of Agriculture a certificate stating that his nursery is free from disease, and that his plants will be raised under proper conditions. Stallions are registered and the owners are compelled to show that they are entitled to be used for the propagation of their species.

If it is important to take such steps for the conservation of plants and animal life, is it not much more important that we take such steps as are necessary to conserve the individuals of the human race? If proper marriage laws are enacted and enforced, there is no doubt in my mind that we have reached, at least in part, the solution of this problem as far as posterity is concerned.

What shall we do with the feeble-minded and epileptic subjects already existing? One school says vasectomy, another castration and still another segregation; none of which is correct in whole but in part. To reach the proper solution of this portion of the question, a part of all three of these ideas must be carried into effect.

SEGREGATION

How are these persons being segregated at the present time?

The institutions throughout the country are doing a great work in this respect, but they cannot segregate the individual until he is first

brought to them, and then only for the period of time during which a more or less misguided parent is willing to leave the patient in the care of the institution. Castration and vasectomy should be used for this class of cases only as an adjunct to segregation.

If it is important to report every case of small-pox, diphtheria, chicken-pox, measles, scarlet fever, typhoid fever, tuberculosis, and a host of other physical diseases, it is, to my mind, just as important to compel physicians, parents, teachers and all citizens, in fact, to report every case of epilepsy and feeble-mindedness of which he or she has any definite knowledge.

The courts should be given authority to investigate these cases when reported to them, and every case should be sent to an institution for a period of observation and inspection, which period should be long enough for the medical observers to definitely report on the condition of the subject. Proved a case of epilepsy or feeble-mindedness, but two channels should be opened to the parents or persons responsible for the patient — either commitment to an institution for life or castration or oöphorectomy. On the other hand, if the latter course is selected, some guarantee should be given by the parents or persons responsible that they are in proper circumstances to give the subject the care and attention he should have.

When this argument was advanced before a meeting some time ago, the statement was made that while the idea was an excellent one, it was at least fifty years ahead of its time. However, I am loath to believe this, as matters sociologically have made marvelous strides in the last few years. If this idea is taken up and properly advanced, I have no doubt that it will be adopted long before some of us have any reason to suppose it will be.

While some such method is being threshed out, what can we do to relieve the situation?

First, those of us who are interested in the subject should enlist the cooperation of the medical examiner of the public schools, the social worker and physicians in general. This cooperation will aid in the early discovery of cases of feeble-mindedness and epilepsy; will suggest a method to remove parental objection to sending cases to an institution; and will place cases in an institution at an earlier and more trainable age than we are now receiving them. Public institutions to-day usually receive cases of feeble-mindedness and epilepsy after all chances for bettering their condition has passed. This should not be. The social worker and the charity organization worker should be instructed as to the proper manner in which to broach this subject to the parent. The parent should not be told that six months in an institution will make John a college professor, a lawyer, a linguist or even a physician, John at the time being an idio-imbecile, cretin or a mongol. This mistake is made time and time again. Parents bring us low-grade children, idio-imbeciles, imbeciles, etc., telling us that they have been informed that it will take not more than a year at most to make a normal person out of these specimens. It is our first duty to remove this misapprehension

on the part of the parent, and, unfortunately, to be honest with them, we must say, in a large percentage of cases, that nothing can be done along educational lines.

The consequence is, on the one hand, that they become dissatisfied and remove the case, which in all probability is a case that demands custodial care; or, on the other hand, the child does not make the progress that they have been led to believe he will make, and they remove him.

The parents should be told plainly and simply that it is an institutional case; that, if there is any hope whatever of an improvement in his or her mental condition, the training must begin at an early date; and that institutions are better able to provide the special care and training the patient needs; that it is not a stigma to be compelled to send such a case to an institution, but, on the other hand, it is a method of procedure in keeping with the best moral teaching of the day.

We find that instead of taking this method, a number of the people interested in the work begin to delve into the realms of psychology and its kindred subjects; that "a little knowledge is a dangerous thing," and they befog the whole situation. These individuals have their use. Their work is a great one, and far be it from me to belittle it. I wish merely to point out how they could better aid the subject in whom they are interested, and the institutions which must ultimately care for the patient, and society at large.

From the statements made to be by truthful and well-meaning parents I am led to believe that a number of these individuals approach all cases of feeble-mindedness and epilepsy from the same standpoint. That is, being unable to properly diagnosticate existing conditions in each case, they assume that all cases are alike. Of course, an argument based on false premises can but lead to false conclusions.

Sammy is a backward child. He has made but little progress in school. He has hypertrophied tonsils, adenoids, some eye defects, a chronic catarrhal condition, which affects to some extent his hearing; he is not properly nourished. His physical defects are removed; he is given plenty of good food and good healthy surroundings; he is supplied with glasses. He begins to take an active interest in his surroundings and soon regains his position in school.

On the other hand, William is an idio-imbecile, lacking in mentality; is slovenly in appearance and does not know how to dress or feed himself. He is, in fact, a low grade case.

The partially informed social worker, knowing the history of Sammy, immediately states to the parent: "Why, this case of William's is just like Sammy's." Remove his tonsils, clear out the adenoids, treat his ears, buy him a pair of glasses, give him milk to drink three times a day, take him to a psychologic clinic and, presto, he is a normal individual.

After cases come to us we, of course, have no specific, with the possible exception of the cases known as cretins, and it has not yet been my lot to see much mental improvement in these cases from the use of thyroid, though, of course, we do use it in these cases. Our cases of epilepsy are helpless, incurable cases and nothing need be said concerning

their treatment, as volume after volume has been written concerning their treatment with but little result.

As to the feeble-minded individual, we attempt to interest and to teach him as much as we possibly can, not with the idea of being able to turn out into the world a normal person. That cannot be done at this time with the classes we receive. We try to teach them to read and to write; to be useful members of our institution community; to be able to receive messages from home; and to correspond with their parents. The aim being to make as many of these patients, as are physically able, partially self-supporting, under the guidance of the institution.

In closing, I wish to make a plea for the better classification of the individual now known as the feeble-minded and epileptic. Unfortunately it has been the tendency of a number of the states during the last few years to class the feeble-minded and epileptic as an entity, and to place them in the same institution. It is true that the epileptic, the feeble-minded and the insane do not belong together; neither do the epileptic and the feeble-minded. They are as different as day is from night, and separate institutions should be constructed for each class. Not only this, but a subdivision should be made, in the class commonly called "feeble-minded," as it is surely not proper to place a trainable case where he comes in daily contact with idiots and idio-imbeciles. The method pursued in Great Britain is, to my mind, an ideal one. As far as possible, asylums are constructed for idiots; other institutions for the imbeciles; special training institutions for the medium and high-grade types of the feeble-minded; and separate schools for the so-called backward child.

In this respect, while the feeble-minded and epileptic do not belong together, neither do reform school cases belong in an institution for the feeble-minded. It seems to be the tendency to place the blame for any moral taint of feeble-mindedness. Thus we are receiving applications, day after day, for the admission of petty thieves, corner-loungers, prostitutes and all classes of moral lepers, as it seems to attach less stigma to a case to say that prostitution is due to feeble-mindedness than to state that the individual is a prostitute, and should be so treated. It is certainly not fair to the unfortunate feeble-minded person, who cannot help his condition, to be brought in contact with such individuals.

There may be some objection to the possible expense to be incurred in the carrying out of such a plan as outlined herein, but in this day and age, when each state has millions to spend for good jails, good courthouses, good capitols and good roads, it can afford to spend at least thousands for good citizens.

DISCUSSION ON PAPERS OF DRS. READ, PUNTON AND CARY

Dr. Theo. Diller, Pittsburgh, Pa.: These are very real things that we have brought to our attention this afternoon—very practical things that we have to deal with in a very pointed way. We have not the political power nor the financial resources to deal with them as we should, and it seems a pity that we must get together and convince ourselves, who are already so convinced, of what should be done and then have no means of carrying out the measures proposed.

Dr. A. M. Corwin: I feel that it is high time, taking Chicago as a basis, as shown by the partial attendance here of the 2,500 to 3,000 regulars, 1,000 homeopaths and the lesser numbers of eclectics and other branches of the profession, that doctors wake up to the importance of these questions that touch them all vitally.

We are on common ground, whether we be specialists or general practitioners or laity, and the sooner we invite all these classes of thinking people together, forgetting the slightly different trend of our thoughts in other directions and stand together, just so soon shall we educate ourselves and get better treatment for these conditions.

Dr. Cary said there are some 18,000 in Pennsylvania. I do not know what the proportion is in Illinois.

There is another proposition I will touch on. That is the fact that we are listening to profound explanations and hypotheses, studying names and theories and results, all of which are good, and we are getting into the practical side for the solution of these questions through such men as Dr. Cary. But we are, after all, looking after the product temporarily only, while the hoppers producing the dependants and defectives still go on producing them in increasing numbers, and physicians as a whole take no steps to put themselves on record against the saloon in public life, which is chiefly responsible for their multiplicity. If we go through the records of our institutions we will find that not only syphilis, but alcoholism, is responsible, largely, for these results. It is time to strike directly at these causes and there will be less of these effects to handle.

Dr. C. J. Lewis: We have been treated this afternoon to a series of thoughts that appertain to the well-being of the race. I believe it is well recognized that wherever there is progress and evolution there is also a large degree of retrogression and degeneracy. There will be, in all races, as indicated by the papers read here, a large percentage of the births that have not had sufficient material to build their bodies that will not be up to the general average. It is to this class that we have been introduced this afternoon. Dr. Punton quotes Bonville as giving the percentage of all people in state institutions there because of alcoholism as 49.

Now, I am not a prohibitionist, but I believe that we, as a race, have retrograding habits. We have the habit of drinking, of overeating, of drug taking, and we follow many habits that lower our standard, and by that standard we shall have to appear in the coming generations in spite of what we may do.

What is going to be done? It is exceedingly difficult to determine. We have societies and organizations of this and that sort and institutions, but they are along special lines. We cannot come together and understand that we are all making for the one common goal of benefit to the race. This is impossible in our present trend, and I think if we could only bring about this result so that we might tell our people how to have children born that would be properly bolstered during intra-uterine life, we should have no more feeble-mindedness from the standpoint of heredity to deal with.

Dr. Julius Grinker: As a resident neurologist I believe that I voice the sentiments of those present in saying that meetings like these will benefit our local profession. We have previously noted that when neurologic subjects were up for discussion the general practitioner was conspicuous by his absence. Such papers are usually placed last on the program, and before the reading is half over the room is almost empty. The same truths sound far better when uttered by guests, such as have done us the honor to come, than when given by men whom you elbow at the street corner.

The speakers told us some good things, and I am glad to have heard them. They have shown the class of work which is being done by the men in the state institutions, and I believe much good will result from such meetings.

I share Dr. Tomlinson's belief relative to the movement started in the Pennsylvania town with reference to reporting cases of epilepsy and feeble-mindedness. There is great difficulty in getting busy doctors to report scarlet fever and diphtheria—to get reports on feeble-mindedness and epilepsy would be next to impossible. Should we get such reports most of them would be practically worthless,

for the simple reason that the average doctor cannot diagnose cases of feeble-mindedness, not having learned it while a student.

Contrary to Dr. Tomlinson's remarks about the nomenclature of constitutional inferiority, I believe the term should stand. We meet many a case in neurologic practice which cannot be classed as insane or imbecile, and yet they are decidedly inferior. Legally, they cannot be sent to insane asylums. If such patients happen to belong to the wealthy classes they may escape notice altogether.

I recall the case of a young man who brought his family to the brink of ruin. He was accomplished in music and had a splendid physique. When a mere child he distinguished himself for his lying propensities, which amused his parents. When he became a man this weakness became still more apparent, and in addition he began to forge checks which his father always "made good." Of course, the parents reached the point of bankruptcy before they had fully realized that they had to deal with a case of constitutional inferiority. He is now an inmate of a sanitarium for the insane. Had this condition been recognized early, an attempt might have been made to overcome this inborn tendency, but in this case nothing was done until it was too late.

If such a patient happens to be the child of poor people, we usually find him in the penitentiary or, in case of a woman, in a house of ill fame. These are constitutional inferiors, and as physicians it is our duty to learn to recognize the differences between them and ordinary criminals. To them not punishment but treatment should be given. The subject is a very large one, and I think Dr. Read has dealt with it adequately.

Dr. Frank P. Norbury, Springfield, Ill.: One of Dr. Read's cases came under the head of having had all the advantages of wealth. I knew her in her girlhood. Her father was one of the wealthiest men of central Illinois. She had all the advantages of education abroad and all that goes with a social position and wealth. But the case was unrecognized as a mental case, and as I came into consultation on the case it was not with the idea that there was any special nervous disorder, or with any special wish on the part of the family, but on the invitation of the family physician, who felt that something should be done.

I think these cases are, as Dr. Tomlinson says, cases which require special care and consideration on the part of general practitioners. There is no type of a case that causes more worry or anxiety or more broken-up homes, even financial distress on the part of the husband, than this type.

I know in my own experience I have come in contact with many such cases. It is an interesting feature to note that most of these women have good husbands; men who will deprive themselves and their families in their anxiety to provide for the unfortunate wife and mother. I think we should give special attention to these cases during the adolescent period, when, if recognized, time and efforts may be saved, which if allowed to be ignored bring distress and misfortune in their train.

I am especially convinced of the truth of the statement that a stormy puberty means a stormy menopause. We have time and again noticed mal-developments, mal-adjustments during adolescence, which impress us this way from the social standpoint, and more especially from the standpoint of the patient becoming a wife and a mother. We should have some means of knowing whether young men or young women are capable of entering the marriage relation. This means a working knowledge of social psychology—eugenics and preventive medicine. The Eugenic Section of the American Breeders' Association offers especially good opportunities for research along this line. It was stated long ago that the ultimate end and aim of life is happiness. This is what we seek for all men and women, some of whom unfortunately will even go to the extent of taking their own lives to bring about happiness.

Dr. N. Schoolman: I can readily express myself as belonging to that class of physicians who may style themselves laymen when it comes to such questions as these under discussion. I shall, therefore, make my remarks free from the standpoint of the layman.

While it is not well, as a rule, to deal in "glittering generalities," still general terms lead to a general conception of a subject, and it is especially well to have general practitioners who do not go into a detailed study of these cases to have a general idea of them.

I was very glad to hear the reader of the second paper, Dr. Punton, lay stress on the necessity for more thorough segregation.

But I was especially interested in Dr. Cary's paper, dealing more specifically with the old-time treatment of the case *per se*, and calling attention to preventive treatment of the constitutionally inferior by stopping them at their source by all the means of safeguarding the marriage, etc.

It is a sign of the times that we are looking at these with a preventive eye, not taking the case after it is progressed and saying it is incurable. Economic conditions have a great deal to do with this question. Social and industrial justice must be looked on as measures of preventive treatment. Constitutional inferiority is a relative term. It gains its significance, when considered like all other diseases, from the standpoint of the virulence of the attack and the force of resistance. These are the factors of the equation. The resistance resides in the individual and social forces that help the individual. One who is constitutionally inferior to withstand the stress of pathologic social conditions may prove constitutionally fit to abide under a happier order. It is a pity that so often environment makes for inferiority. Instead of it being the easy and the natural thing to do right, to be honest and upright, it is the hard thing to do, and if perfectly normal individuals—those with all the strength of their capacities—find it a hard thing to do right, how much harder must it be for those who are constitutionally inferior.

Dr. Blanck: I should like to say something of the commercial side of this question. A great deal can be done when we look at the money question. History shows that when nations become rich and luxury is common, the people begin to go down. When we look at the matter we find that it is very often luxury, too much luxury, or the cry for luxury, which brings people from the right track.

Nowadays the education of the young all points to luxury. Every paper, every magazine, everything that our children read, points to luxury. All the plays they see feature this idea, so that by the time they have graduated, instead of having been taught character, self-reliance and self-control, they have a craving for luxury. That is one side of the question.

If the general practitioners want to know the truth of this let them go to the juvenile court, follow these children to their homes, and there they will see very plainly that most of the inferiority is, primarily, an economic problem.

Even the institutional care of children has come to be placed on dollars and cents basis. If the institutions cannot make money they very soon go out of business. The children from the county institutions are "farmed out" at so much per month. Do they get medical attention? Indeed, they do not. That would cost money, and is not in conformity with the ideas of those in charge of these children.

Dr. H. C. Keough: In reference to the lack of interest shown by general practitoners, let us find out possibly one reason for it. General practitioners come in contact with the patient, they look him over, perhaps in consultation, and it is decided that this patient should be placed in an institution. He is taken to the institution and the general practitioner loses sight of him. His contact and therefore his vital interest in that patient is gone.

In any other line of medicine, no matter what measures are undertaken for the cure, or who is called in consultation, the man who originally had the case follows it to the end.

If a man could take his cases to some sanitarium and there, in consultation with the attending staff, continue the management of the case, he would not lose his interest in this class of cases; but that is not within the range of Chicago physicians.

There is no reason why the general practitioner should know anything about these cases. It is my pleasure to be associated with Dr. Kiernan, where I believe the advice I have been given from day to day and week to week has led to good results. It is all in one's ability to consult with an able man and see that his treatment is carried out.

Dr. Charles Read (closing the discussion on his part): I have only one word to say in closing. In response to Dr. Keough, I will say that I believe there are very few, if any, institutions that will not welcome the general practitioners when they have cases they wish to have cared for in the hospitals. I know we are always glad to have him meet us on cases that he brings and give us the benefit of his knowledge of the previous history of the patient.

I have enjoyed the other two papers exceedingly. They were more confined to the question of how to deal with the patients, while I tried to confine myself to the recognition of certain phases.

I do not think I laid so very much stress on terminology. It was not my intention to do so, although I did try to follow the French authors in differentiating between idiocy and imbecility. Most of these cases are probably of the imbecile type. The mere matter of names is little; it is a question of the personality of the individual. That is what I have tried to bring out. That is what we must become familiar with if we wish to recognize these conditions outside the institutions. I think there should be some distinction between the subnormal individual and the insane individual. They quite often verge onto the psychoses, but often it is more a sagging in the characteristics which have been peculiar to them outside the institution.

Dr. John Punton (closing the discussion on his part): I feel very much pleased and honored with the generous discussion given my paper. I believe we are all agreed that there is such a thing as constitutional inferiority; and I believe we are also agreed that there is not sufficient being done by the states for these unfortunates.

Many people to-day suffer from a neuropathic diathesis which we all admit is one of the prime factors underlying this condition. Some ten years ago I read a paper on this general subject in which I called attention to the fact that many of the children in our public schools were out of their environment and should not be there. After reading the paper the general profession present concluded that it was a fine-spun theory, which was, however, unfortunately not practical. In that paper, among other things, I advocated the legal governing of marriage. Two months ago I read another paper on the same topic to the same society, and called attention to the fact that by processes of education of the profession the "fine-spun theories" of my paper have come to be quite largely believed in. That medical inspection of schools was very generally an accomplished fact, and that in almost every state it was being recognized that something should be done legislatively to overcome constitutional inferiority.

I was interested in Dr. Keough's remarks about physicians maintaining charge of patients after their admission to hospitals. I have been associated with such institutions for thirty years, and I have seldom seen a physician show sufficient interest in a case which he had sent to the institution to come in and study its progress, although he had a perfect right to do so and even to take part in the treatment if he wished. The fact is that almost the opposite is true; general practitioners seem to feel their incompetency to handle such conditions, and do not come near them after they have been committed.

Dr. H. M. Cary (closing the discussion): I am very glad that the ideas advanced in my paper have caused some discussion. What we want is a war, not of words, but of work, work, work! There is not a person here, professional or laity, man or woman, general practitioner or specialist, who cannot convert one individual to the necessity for something done on this matter, if they will work. Something must be done. This constant fighting over this and that and between the general profession and the specialists is all wrong, when we consider what we have to attain. Something to stop the increase must be put into effect.

Expense? In New York 2,000 are being cared for in ungraded schools, and in the graded classes 6,000 children are shut out because there is not room for them in the schools since this provision has been made for the feeble-minded. In 1910 the insurance commission paid $1,500,000 for fires caused by feeble-minded. A quarter of that spent in prevention and treatment would have accomplished wonders.

As to alcohol as a factor in the cause of epilepsy and feeble-mindedness (understand me, this does not establish anything, but simply gives you a little basis for comparison and thought): March last, out of 100 cases examined, sixty-five were found to be directly attributable to alcoholism.

CRIMINAL INSANITY*

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The study of the criminal insane in Illinois is to a great measure limited to the Charities Service in general and to the Chester State Hospital in particular.

Since the Chester State Hospital by legal enactment admits only those of the above mentioned class it will be in order to review in a brief way the circumstances of these admissions.

Classifying them according to the manner of commitment they will readily lend themselves to the following divisions:

Class A. Those who are admitted on certificate from one of the penal institutions. This class constitutes about 60 per cent. of the total admissions.

Since this class stands convicted of crime before the question of insanity is raised, except in rare instances, one would naturally infer that the criminality antedates insanity unless a more careful study of each individual is made than the usual court proceedings offer.

This phase of the question will be discussed later.

Class B. Those committed to this institution directly by the courts, the command for which is conveyed to the superintendent in a writ called a mittimus. This class constitutes about 35 per cent. of the total of those admitted.

The court in its effort to determine the degree of criminal responsibility, naturally divides them into two classes: First, those against whom a charge of guilt is lodged for the reason that the circumstances surrounding the crime clearly indicate to the court that at the time of the commission of the crime the defendant was sane, but between that date and the arraignment in court the defendant became insane. Second, those acquitted of crime on the ground of irresponsibility because it appeared to the court that the defendant was clearly insane at the time the crime was committed.

Class C. Those inmates of other charitable institutions who become dangerous to either person or property and are transferred to this institution.

* Read in a Symposium on Mental Diseases at Hotel La Salle, Chicago, April 19, 1912.

A further study of the above classification leads to the inference that in about 75 per cent. of the admissions the crime antedates insanity, but conclusions reached from the study of the above named classes can not be regarded as final and complete in a comprehensive consideration of the question since we have to deal with only the less fortunate of the criminal class.

It has been said that the number of convictions amounts to only 5 per cent. of the total number of arrests, and the number of those who escape arrest are far in excess of those who, because of a poorer mental endowment, are caught in the elastic meshes of the legal net. The confines of the criminal class are still enlarged when we include those of a positive criminal tendency, who for lack of absolute want, or the proper environment have not committed an indictable crime. Again the limitations materially widen when we include a host of people who are not guilty of an indictable offense but are vicious by nature.

The application of the term crime is very elastic in use and has only a relative meaning, for certain acts are classed at times as criminal and at other times as vicious: e. g., as long as the actor is the recipient of the results of the act it is classed as vice and the state lays no penalties against its commission, no matter how destructive or flagrant the violation of the moral code.

If the act results in the taking of the life of a fellow man it is called murder, but should he by self-inflicted wounds terminate his own life it is condoned as an unfortunate circumstance. Or should he satisfy his lustful desires by a forcible seduction of a female, it is considered a heinous crime and is severely punished, but should he secure satisfaction by the practice of self abuse even to the wrecking of his nervous system and the dethroning of reason, he would be called vicious and his habits deplored.

The study of criminology in the past has been desultory and fragmentary and this condition will prevail until the student of this branch of sociology arrives at, and adopts some scientific classification. That criminals are susceptible of such a classification cannot be questioned since it has a basis in physical or mental fault and will lend itself to a classification with distinctions as clearly differentiated as insanity or other conditions due to the deviation of a person from the normal species. This fact has long since been stated conversely as follows: "Mens sana in corpore sano." Since the intellectual and moral faculties have definite centers of localization, a basis is thereby offered for a definite classification of criminals.

In substantiation of this statement, Lydston quotes Benedict as saying: "To suppose that an atypically constructed brain can functionate normally is out of the question."

The same writer says: "With reference to the brain defects, there is so much clinical evidence of the aberration of morals and conduct from brain disease or injury that we are justified in believing that brain defect of some kind affecting the mental and moral faculties is the *fons et origo* of criminality." And again, "Beneath all phenomena

of social disease lies a variation of intellectual and moral faculties from the normal average standard."

Lombroso attempted a classification of criminals, which though crude in form and elementary in nature, will offer as reasonable a basis for the discussion of the subject as any proposed.

He says in his Criminal Man that "all law breakers cannot be classed in a single species, for their ranks include very diversified types who differ not only in their bent toward a peculiar form of crime but also in the degree of tenacity and intensity displayed by them in their perverse propensities so that, in reality, they form a graduated scale leading from the born criminal to the normal individual."

Again he says: "Born criminals form about one-third of the mass of offenders," and of this he theorizes as follows, while making a post-mortem examination on the brain of an Italian criminal named Vilella: "At the sight of the skull I seemed to see all at once, standing out clearly illumined as in a vast plain under a flaming sky, the problem of the nature of a criminal who reproduces in civilized times characteristics, not only of primitive savages, but of still lower types as far back as the carnivora." Lombroso was overwhelmed with this vision when he laid open the skull and observed the "vermis was so much enlarged in the case of Vilella that it almost formed a small intermediate cerebellum like that found in the lower types of apes and rodents and birds." Thus he explained the origin of the enormous jaws, strong canines, prominent zygoma, strong orbital arches, etc., as common with carniverous animals, and the increased stretch of the arms as common with the ape. This reversion to a former species he terms atavism and concludes that "the criminal is an atavistic being, a relic of a vanished race."

Following out this line of investigation we are irresistably led to the conclusion that the foundation for the physical defects that lead to the "career of crime" in later life is laid when the master hand in the process of differentiating the embryonal cells of the fetus into various organs, fails to conform them to the usual type of the race.

At the time of fecundation, the ovum of the most degenerate savage does not differ materially, from a histologic standpoint, from the ovum of the highest type of civilized man. As the process of differentiation and development advances the savage, by virtue of inherent qualities, is only capable of rising in the process of growth to a level with the racial type of which he is a member.

The ovum of the most civilized type of humanity begins existence on an equal level with the savage, and as development progresses the differentiation between the two types is very slight, during the early periods of existence, but as time advances the paths of divergence separate more rapidly during childhood and adolescence than during the former periods of existence.

The degenerate class not only develops more slowly but they reach the high tide of development at an earlier period of life than the normal individual. This period of development usually lasts until

puberty. This course of reasoning leads to the conclusion that the criminal type among the civilized races are those unfortunate members who possess from the hour of fecundation some inherent property or power that inhibits or impedes the process of differentiation of the civilized type from that of the savage, and leaves them more nearly conforming to the savage than the civilized type. A deviate of this class will, during infancy, manifest outbursts of unnatural passions by scratching or biting the mother or other members of the family. At a later date he will manifest a disposition of cruelty to animals and weaker playmates; will wantonly destroy property and maliciously violate the rights of his companions and will in various other ways throughout the journey from childhood to maturity show the progressive development of the criminal nature.

That all students in criminology do not agree with Lombroso in his conclusions is clearly set forth in the following quotation from Judge C. A. DeCourcy in "Problems of Crime;" while discussing the erroneous views coming down to us from barbarous days and the general public, he states that the "unfavorable and skeptical attitude of the public is the widespread conviction that the criminal is a class by himself, different from all other classes, with an innate tendency to crime; marked by certain peculiarities of the body, and whose acts are beyond the control of the will. This 'criminal type' theory, the born criminal of Lombroso, is not based on reliable and scientific investigation."

Basing his further remarks on records of the investigation of three thousand of the worst convicts of France he states, "The result of that investigation, thoroughly scientific as it was, showed that both in regard to measurements and the presence of physical anomalies in criminals there is a startling conformity with similar statistics of the law-abiding class." It has been stated that the so-called stigmata of degeneracy do not essentially accompany a criminal tendency, for many persons of undeviating moral rectitude frequently possess many such stigmata, while criminals may possess so perfect a physique that careful study will reveal few, if any, stigmata of degeneracy. The explanation for this state of facts is based on the hypothesis that the perfect physique is inherited from one parent while the criminal tendency is inherited from the other. While we are compelled to admit this statement, yet it is of very infrequent occurrence and only indicates that the arrest of development described in the preceding remarks, may exist in either the physical, mental or moral spheres or any combination of these.

In the preceding discussion I have intentionally avoided any attempt at a lengthy enumeration of the various stigmata of degeneracy, for I assume that these are in a great measure familiar to all. Your attention will hereafter be called to the second class, called by Lombroso "criminaloids," or those in whom criminality is not manifested without some adequate cause or some disturbance of the mental or moral equilibrium. Numerically this class, Lombroso states, constitutes about two-thirds of the criminal class. This class usually has rather an

obtuse inhibitory power but as long as they are surrounded by healthy environments, and continue in habits of industry, they do not yield to criminal tendencies until some special temptation or mental disturbance arises.

The class of criminals discussed in the foregoing has to do principally with results of prenatal causes but the class now under consideration show the results of postnatal changes.

I wish to state a proposition, at this time, that may not be accepted as a fact by those who are present. This proposition is, that any interference with or inhibition of the changes that take place in a child as it develops into maturity or that prevents a child from maturing into a fair representative of the type of the race to which it belongs is likely to develop an individual that under favorable circumstances will become either insane or a criminal, or both.

The reason for this statement is apparent when it is admitted that children manifest many impulses in common with criminals, e. g., outbursts of anger, a spirit of revenge, idleness and often a lack of affection.

These and many other traits that are common to criminals are either eliminated by the influence of moral training and example, or the child develops the ability to properly regulate and control these impulses according to the standard of action of the race of which it is a member.

I do not wish to discuss at this time the immediate effects of syphilis in the production of the criminal type, but wish to present the remote effects of syphilis as an active factor in the production of the criminal type although it has not usually been recognized as a factor of much importance. Syphilis in the ancestor will act as a disturbing factor in the development of the children "even unto the third and fourth generation" and will cause them to be backward in development or a deviate in type. The progeny of a syphilitic ancestor is usually under sized, sluggish in attitude, lacks symmetry of development in a striking manner, and bears the general appearance and demeanor of one much older than his years.

William W. Graves, writing of this class, says: "Many of them develop sexual instincts long before puberty, and these are often gratified by masturbation, sexual intercourse or otherwise. Strenuosity and intensity characterize many of these individuals and before or during adolescence, such mental proclivities associated with the inherently weak constitution, sooner or later lead to an inevitable break, and they make up a large percentage of the cases commonly classified as neurasthenia, hysteria and dementia præcox. Many cases of epilepsy developing in early or later periods of life are to be found in the individuals of the second and later generation. The incorrigible and so-called criminal classes are increased from the ranks of the second and later generations in a degree probably unequalled by any other source."

The part played in the production of crime by the functional disturbance of certain organs and glands in the body has not been given due consideration.

There is much evidence to show that injuries, tumors and excessive development of the cerebellum causes a person to run the gamut of sexual perversions and crimes.

Lydston says, "Emotional insanity and melancholia—the latter of which is intimately associated with suicide—have been shown to be often associated with disease or injury of the angular and supromarginal gyri."

And again he says, "Gall claimed that the anterior part of the temporal region of the brain was the seat of the impulse of theft."

According to the testimony of many writers a pathologic change in the temporosphenoidal lobe is likely to develop emotional disturbance leading to murder, and that the majority of murderers show an over-development of this lobe.

Since inhibition is a function of the intellect both of these faculties have centers located in the frontal lobe, and its disturbance thereby impairs both faculties. The noble emotions, as friendship, affection and love, were located by Gall in the occipital lobe.

Athyrea, whether due to atrophy or thyroidectomy, in a child prevents normal development of the body, and causes nervous and mental symptoms with delusions of persecution. In myxedema the mental faculties undergo a change with the development of a condition of melancholia.

Certain changes in the sexual organs are a factor in the production of hysteria in which are found alternating states of excitement and depression accompanied by hallucinations and delusions of persecution.

Infectious diseases sometimes modify the function of the ductless glands, causing a condition resembling drunkenness which may be followed by criminal acts.

The changes in the central nervous system incident to senility cause inadequacy of thought, delusions of jealousy and often crime. Rape, arson and homicide are often committed while in an automatic state following or preceding a convulsion. The pyromaniac is either found to suffer from psychical epilepsy or is prompted to the crime by an obsession which becomes an irresistible impulse. That other causes than organic lesions may result in the production of crime I will herewith quote the testimony of T. S. Mosby, Esq., of the Missouri bar who, in an unpublished paper, says: "Statistics show very clearly that crimes against the person are proportionately most numerous in warm climates, while in the cool regions crimes against property are the most frequent. In the warm climates of Italy and Spain, we find the maximum of crime in Europe, while the cooler climes of England, Scotland and Holland supply the fewest murders in proportion to population."

He quotes Dr. F. G. Lydston as saying, "The tonic effect of cold weather in maintaining the nervous and mental equilibrium of neuropaths and thus inhibiting crimes of impulse, is obvious. The physiologic turmoil in the sexual system ushered in by spring is well known. Poets have sung of it and rapists have been hanged for it."

Again, he says, "Prof. Enrico Ferri has demonstrated that in France the greatest number of crimes against person are committed in the summer season, while the maximum of crime against property is reached in winter."

It is noticeable that the "great waves of crime" occur in seasons of extraordinary heat and humidity and the center of the "wave" is the great center of population.

An editorial on "Psychic Contagion of Impulse" appeared in the *Journal A. M. A.*, dated Aug. 17, 1907, as follows: "When we speak of psychic contagion in our own time, most people are apt to look on the expression as eminently figurative and as containing very little, if any, literal truth. Many things in recent life, however, seem to make it clear that some not far distant generations will be quite as surprised that the men of our time did not recognize the influence of psychic contagion as we are now amazed at the generations which did not recognize physical contagion as a great force for evil."

My purpose in devoting so much time to the discussion of crime is due to the fact that the subject is given less consideration than insanity.

On reflection it will be seen that all the factors producing crime and all the characteristics of the criminal, enumerated above, are classical causes of insanity and the stigmata of the insane. The points of resemblance between crime and insanity are so numerous that we are led to conclude that their difference is mainly one of degree. In the concluding remarks I will endeavor to show the inherently close relationship existing between crime and insanity both from a physical and psychical standpoint.

The tendency now is to impute a higher degree of responsibility to the insane and less responsibility to the criminal. The insane are frequently found to reason coherently on most subjects. This condition may be explained by the fact that an analysis of the mental wreckage may show a dissolution of only one faculty, therefore a crime committed by these people often bears the impress of forethought, intent and cunning.

Heredity may endow a person with a morbid intensity of desires or a weakened control. The results that may be expected in either case are either crime or insanity. The close relation that exists between crime and insanity was doubtless recognized by Mercier when he said, "Mind and conduct go together. This interaction on each other is close, constant and almost inextricable, and disorders of the one always, no doubt, accompany disorders of the other, though the two are not equally recognizable."

It has been said that the mass of moral humanity is like a great flowing river with the insane on one side and the criminals on the other. This theory is neither borne out by experience nor psychologic reasoning.

The history of commitments in general, indicates that the insane are usually considered "cranky," fanatical or eccentric during the early

stages of mental derangement, and the authorities are not aroused to the seriousness of the disorder until some violation of either the moral or civil code is committed. The following statement clearly sets forth the natural order of sequence in which insanity and criminality usually occur. For the sake of an illustration, suppose that a person passing a shop window sees a jewel of great value and becomes conscious of the presence of a strong desire to possess it. If he arrives either by instinct or process of reasoning at the conclusion that he cannot afford to risk his future welfare for the sake of the gratification of the pleasure of present possession, we call him a sane and virtuous man.

Should a second man, while passing by, see the same jewel and after due consideration arrive at the conclusion that he can not afford to jeopardize his future welfare for the sake of the pleasure of immediate possession, but that he will wait until darkness falls, and the streets are practically deserted, and then, because the chances of detection are more remote, he is willing to risk future benefits for the sake of the pleasure of present possession, we would without hesitation call him a criminal.

Should a third man while passing see this jewel, and although the proprietor is within the shop and the streets without are thronged with passers by, decides to risk his future good for the sake of the pleasure of immediate possession by immediately and forcibly taking the jewel without regard to apprehension, we would pronounce this man insane.

For a person to escape a career of crime and an insane existence they should both know the right and possess the ability to do it. An inability to know the right indicates an intellectual disturbance and an inability to do the right implies a disturbance in the volitional field and any derangement in either or both renders the person insane and usually makes him a criminal.

Depression of the apathetic field with its correlated symptoms is called melancholia and frequently prompts to suicide. Systematized delusions of persecution gradually changing to delusions of grandeur, with transformation of personality is called paranoia, yet in reality this is the ensemblage of the mental qualities necessary to a murderer.

The parasyphilitic lesions giving rise to general paralysis of the insane causes in the majority of cases the expenditure of all funds, the contraction of unreasonable debts, and finally the open violation of the moral code.

Clouston said, "Murder by an epileptic should be looked upon as being as much a symptom of his disease as larceny by a paretic."

The manic depressive group do not commit crimes as frequently as some other types since the diversibility of the intellect permits it to discard a criminal thought before the volitional powers can execute it. The senile dement will often perform acts of indecency, theft and at times suicide. Suicide may occur in involutional melancholia owing to the emotional depression resulting from the belief that they have committed some unpardonable crime. The history of the imbecile is often a recital of petty thefts, rape, assaults and homicides.

It will be seen from the above that either crime or insanity may result from a disturbance in the equilibrium of either the intellectual, emotional or volitional field. This disturbance may be the result of the deterioration of certain faculties or the over-development of the remaining complemental faculties.

RESEARCH IN PSYCHIATRY *

BAYARD HOLMES, M. D.

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Nearly fifteen hundred persons went down on the *Titanic*. This is less by 500 than the number of persons committed to the institutions of the insane in the state of Illinois in one year. The whole world is aroused in an effort to prevent the repetition of a similar nautical calamity. Nevertheless the whole world is committing to the institutions for the insane within the domains of civilized countries, not less than 80,000 citizens a year from every walk of life, from the rich and the poor, from the educated and the uneducated. Moreover, this has been going on for fifty years and yet no vigorous, rational, adequate methods have been instituted or practiced, designed to discover the causes of the diseases or physical conditions which lie at the bottom of insanity.

I know very well that the tendency of the time is toward the mystical, the intangible and the occult. Mysticism has even entered mathematics, and among a certain class of mathematicians, has almost obtained the position of symbolism which it occupied among the pre-Christian mathematicians in Egypt. Mysticism has taken its place in the hypotheses of physics and attained such influence that at the last meeting of the Association for the Advancement of Science, the President of the Section of Physics, Professor Magie, found it necessary to combat this tendency by devoting to it a large part of his address. Mysticism has come into a department of natural philosophy which now forms a world-wide cult, and one of its prophets, William Fliess, devoted a whole book to the exposition of a mystical family substance, the existence of which he established by most remarkable mathematical formulas, and the rhythmical fluctuations of which he illustrates by numerous examples. These fluctuations, he shows, are exactly timed by the mystical numbers, 28 for the female and 23 for the male. By this system a peculiar therapeutics has been still further developed by Max Siegmund, who shows that the coincident sickness of blood relations are to be treated by treating the father, the mother, the uncles and the aunts whenever the physician is called to see the child with colic or hives.

During the past fifty years the alienist, the diplomat, the rhetorician and the philanthropist have had their way with the institutions for the insane and with the departments of charities and correction. It is now time for the scientist and the physician to take hold of the problems of insanity.

* Read in a Symposium on Mental Diseases at Hotel La Salle, Chicago, April 19, 1912.

If, as rational and scientific men, we wish to discover the causes of insanity, we ought to pursue those methods which have been rewarded by success in discovering the causes of other afflictions of mankind. We should do this in spite of any tendency of the time toward any other method. We should not be led astray by the success of occultism in building temples or in curing complaints.

It is perfectly legitimate to experiment in the crude and single-handed manner which brought immunity against small-pox; it is perfectly legitimate to use remedies which are applied empirically or by accident, as mercury has been used against syphilis, but it is far more hopeful to undertake such a systematic course of investigation as has led to the discovery of the cause of the disease, such as Koch instituted in tuberculosis, and such as the various laboratories have undertaken in investigating the sleeping sickness and other tropical diseases.

Research for psychiatry, then, ought to be undertaken according to the clinical method of Sydenham and the laboratory method of Metchnikoff, and every state should expend for research not less than 10 per cent. of the appropriations which are so liberally made for custody and confinement.

In the early explorations into disease it was possible for a man to make a great discovery single-handed, but any reasonable, rational research for psychiatry must be a research *en masse*. A squad of research men must pursue truth through this dense and dark continent of our ignorance. Every clinical technologist should do his part — the chemist in his department, the experimental biologist in his department, the bio-chemist, the bio-metrician, the serologist and the cytologist in their several departments, to bring about the subjugation of parallel lines of nature's entrenchment against our science and our national health.

Probably the first department of a laboratory of research should be manned by a skillful bibliographer. The library has reached such proportions and such complexity that no individual who has exacting duties at the laboratory desk or in the clinical laboratory can possibly find the time necessary for bibliographic research. This research must be in the hands of an expert and sympathetic bibliographer. He must have at his hand not only the current literature of our periodicals, but he must also have accessible the bibliographies of the past.

The workers in a laboratory of psychiatry need to have at their disposal the literature of modern science, and the location of such a library will determine the proper location of a laboratory of psychiatry: hence it appears at the very onset that an efficient laboratory for psychiatry must be located where libraries already exist. This would naturally bring the laboratory to the university, or, at least, to the largest cities in the state.

The number of workers in a laboratory of psychiatry ought to be sufficient to cover the whole field of the natural sciences with an expert at the head of each department and special workers under each of these heads.

Thus again it seems that such a corps of experts could be found in each of the universities. They would be men who had arrived at a

prominence in their profession, which would save the workers time and effort by their advice and by the conception which their position and attainments afford.

The number of men who are prepared for such a laboratory is almost unlimited, provided they are selected from the universities at a sufficiently early age. All the great research men have come from general laboratory training into their special field early in life. The fact that research in psychiatry has never been seriously and aggressively undertaken has allowed this department of medicine to escape the attention of prospective research men. In France the Prix de la Société medico-psychologique for the year 1912 amounts to only 2,400 francs, and there is no laboratory similar to that of Metchnikoff in which research in this direction is exclusively encouraged. A body of research men cannot be built up by offering prizes such as the Nobel Prize, because the only persons fitted to undertake the work must necessarily be young, and dependent upon a salary for their support. The prize cannot be given to a squad, even though the squad should attain an unaided and undisputed achievement; the reward will eventually come to the state and society as a whole, and the research men should be placed on a civil service basis, with a growing salary and an adequate pension in case of disability. Bacteriology and vivisection experiments are dangerous occupations and the risk to the research man is a matter of lamentable and common knowledge.

If private initiative can be useful in any way in establishing a laboratory of psychiatry it must do so with the full cooperation of all the existing endowments of the university, and with a complete cooperation with a neighboring institution for the insane. No less than eight scholarships, with a value of $2,000 a year for salaries, can hope to make even a beginning in the research which shall dissipate our ignorance of the etiology of even one of the insanities. Such a corps could be attached to a university like that of the University of Chicago, but it would necessitate the building of an institution for the insane with a full corps of physicians and nurses, and adequate for the accommodation of twenty or thirty patients of a single clinical disease. Moreover, this institution, on account of the monopoly which the state maintains in the custody of the insane, would necessarily be under state supervision.

At Johns Hopkins there is a small endowment of $500,000, at present under the directorship of Adolph Mayer, which is completely given up to the psychogenetic origin of the insanities. Therefore nothing can be expected in the rational study of the physical conditions of the insane at Johns Hopkins unless another private endowment is established there.

At the Rockefeller Institute a little work has been undertaken which verges on psychiatry, but the field is so enormous and the demands for more promising and quicker achievement have been so alluring that little can be expected from New York for some years to come.

As the burden of the care of the insane is now met by the legislatures of the several states, we must naturally look to the same legislatures for a rational expenditure designed to do away with the need of this unproductive tax.

In the states of California and Wisconsin ideal conditions exist for the establishment of a laboratory of psychiatry in the university of the state, with full cooperation with the institutions for the insane located in the immediate vicinity, in pursuing this promising research. In the State of Illinois, the state university is almost out of the question on account of its remoteness from the institutions of custody. It is likely that Dunning will soon be rehabilitated and made one of the principal asylums of the state. It is more than likely that an aroused public conscience will demand that a reception hospital be established in the City of Chicago for the uncommitted insane, and this might be attached to and be a part of a hospital for research. The advantages of the great John Crerar collection and the aggregation of scientists at the University of Chicago would make this combination an ideal one, provided the prerequisite cooperation could be established between the University of Chicago and the Board of Administration of the state.

The very atmosphere of research which surrounds the University, and the highly optimistic spirit of the City of Chicago itself, would promise well for the enthusiasm of laboratory workers, who are so often depressed by the discouragement which naturally attends protracted labor upon a false and fruitless lead.

When for a term of years the state has devoted a tithe of the largess now expended in custody and confinement upon research and cure, when all natural, rational avenues for disease have been followed out, and no physical basis of such long-lasting conditions as dementia præcox have been discovered, then it seems to me that every good citizen, that every rational physician, that every sociologist and humanitarian will unite in such a legislative effort as will make it possible to obtain for these afflicted ones the remedy of death. By the law of equity which provides a remedy or attempts to provide a remedy for all legal torts, it ought to be possible for the friends of the insane to appear in court and secure an order which would command the sheriff or his deputy to execute the hopelessly insane and remove them from the consuming custody of the state, from their own hopeless calamity, and give their relatives and friends the consolation of the end.

TONSILLECTOMY IN CHILDREN

G. W. BOOT, M.D.

CHICAGO

Removal of tonsils and adenoids has been found to benefit so many conditions that a description of the method followed by the author in the removal of 400 or 500 tonsils yearly in the Children's Memorial Hospital may be of interest to those doing such work elsewhere. The patients are children varying in age from a few months to 13 years. Older children are not admitted to the Children's Memorial Hospital.

Cases Refused Operation.—The following classes of cases are refused operation until the conditions mentioned are rectified: marked anemia, albuminuria, hemophilia, acute inflammations of the tonsils or vicinity, fever.

Anemia.—The removal of tonsils is a work of convenience and need never be one of haste. Since tonsillectomy is rather a bloody operation it is thought best to postpone operation if the child shows a marked degree of anemia. The child is put on iron and good diet and operation is done after the anemia has improved.

Albuminuria.—Acute nephritis following anesthesia occurs sufficiently often for one to be careful in advising general anesthesia in a patient whose kidneys are damaged. For this reason if the urine shows albumin or casts the operation is postponed until treatment has cleared up the condition, except in cases where it is thought that the albuminuria is the result of the tonsillar infection.

Hemophilia.—No history of hemophilia has been found in the cases operated on. My interns are instructed to inquire carefully for a history of hemophilia. In spite of our care in this respect one or two cases have had considerable hemorrhage following tonsillectomy.

Acute Inflammations of the Tonsils or Vicinity.—Because of the increased vascularity of the parts and because of the increased danger of infection following tonsillectomy if the vicinity is inflamed, acute inflammations are considered a bar to operation.

Fever.—No child is operated on whose temperature is not normal. If there is fever the operation is postponed until the cause of the fever is ascertained and the child's condition has become normal.

Preparation for Operation.—The patient is admitted to the hospital the day before operation and the usual preparation for any operation given. If the operation is done in the afternoon the patient has bread and milk for breakfast and no food afterward. While waiting for operation the laboratory examinations are made and if any contra-indications are found the operation is deferred. A half hour before the operation the child is given a hypodermic injection of $^1/_{150}$ gr. atropin sulphate.

Anesthetic.—Ether is invariably used for the anesthetic. It is given by means of a paper cone covered with a clean towel and filled loosely with gauze. A fresh cone is used for each patient. The patient's eyes are covered with cotton wet with water. The cone is placed over his mouth and nose and a little ether dropped into the open end of the cone. The ether is dropped slowly at first but afterward in gradually increasing amount as the patient becomes used to the smell. If the patient makes any fuss about the ether he is told to blow it away. This little maneuver works unusually well. The efforts of the patient to blow the ether away result in his taking an increasing amount of anesthetic and he goes to sleep more quickly and easily and with less ether. Unnecessary talking is avoided while the patient is going to sleep. Given in this way the ether is not particularly disagreeable. Anesthesia is rapidly induced and a half pound of ether suffices for four operations. The

anesthesia is pushed only to the point where the pharyngeal reflex is abolished. As soon as the patient breathes slowly and regularly without a catch or moan to the breathing the cone is removed and the operation begun. Sometimes the tonsils are so large the patient chokes on them if fully anesthetized. In such cases one tonsil is removed under incomplete anesthesia.

Operation.—The patient lies on his back with the head turned toward his left. A small pillow is placed under the head and right shoulder. A Denhart mouth-gag is inserted in the right side of the mouth. A Pynchon tongue depressor is placed in position by the operator who sits on a high stool before the patient. The tongue depressor is intrusted to the assistant who stands behind the patient and whose duty is to hold the depressor exactly where it is placed by the operator. The operator wears an electric headlight of simple pattern; one holding a 16 candle power globular bulb with silvered back and requiring no rheostat. This illuminates the field of operation well and the light does not stand out from the head far enough to be in the way. There is no trouble with lamps burning out and no assistant is needed to control the rheostat.

The left tonsil is removed first. It is seized by the Pynchon tonsil forceps and drawn toward the median line and then pushed away from the median line and under the anterior pillar. The object of this maneuver is to define accurately the position of the anterior pillar. The margin of the anterior pillar being clearly defined the tonsil is again drawn toward the median line and the mucous membrane incised slightly with the long handled scalpel. This cut must be very shallow or it will pass through the capsule of the tonsil and the operation rendered difficult. The scalpel used for this work is one I have had made to order by F. A. Hardy & Co. It is a small scalpel with an abrupt cutting end on a long slender handle. The cutting end is kept very sharp. The cut is made about a half inch long. With a long and rather slender pair of blunt pointed scissors curved on the flat the anterior pillar is pushed outward away from the tonsil. One blade of the scissors is inserted between the capsule of the tonsil and the pillar and the tissues cut around the lower border of the tonsil. The scissors are then reversed and the cut made upward thus circumcising the tonsil except for its posterior attachment. These cuts are made as close to the tonsillar border as possible. The scissors are now closed and used as a blunt dissector. Any bands holding the tonsil down are cut with the scissors until the tonsil can be easily slipped in front of the anterior pillar. The forceps are now removed and again attached after passing through the loop of a Tydings snare. The wire loop is made as small as can conveniently be slipped over the tonsil. No guard is used for the wire loop. No. 8 is the size of the wire used. The tonsil is now drawn toward the median line and the loop of wire tightened around its remaining attachment. As soon as the tonsil is cut off the tonsillar fossa is wiped out with a sponge on the end of a long curved throat hemostat. Another sponge is placed in the hemostat and held against the tonsillar fossa by an assistant. More anesthetic is given, this time by pouring ether freely on the lower part of the cone.

While the ether is being given the operator reshapes the wire loop for the other tonsil and when this is done the operation is continued. As soon as the hemorrhage is checked from the second tonsil the adenoids are removed with a Brandagee forcep followed by an adenoid curet. The bleeding is stopped and the child put to bed.

Precautions.—Great care should be used not to get the uvula caught in the snare. The operator must be sure it is not included before tightening the snare. Neglect of this precaution has caused many unfortunate results. I know of one instance where the whole of the uvula and a portion of the soft palate were removed leaving a condition of cleft-palate and ruining the boy's voice. In another case the uvula, a portion of the velum and most of one of the pillars were removed also with unfortunate results. These accidents occur to beginners and to occasional operators who get flustrated and in their blind excitement work without seeing what they are doing.

I know of two cases where diphtheria followed on the operation wound. For this reason the patient should be kept under observation for a few days. The grayish slough following tonsillectomy at times resembles very closely the false membrane of diphtheria and cultures are needed to differentiate them.

After-Treatment.—The patient is watched by a nurse until he is fully awake and no longer spitting blood onto the bed-clothes. He is allowed water and soft diet almost as soon as he wishes them. Unless there is some complication he is allowed to go home the day following the operation. No gargles are used. Their use is painful and the distress caused by their use more than offsets the good to be derived from them in uncomplicated cases.

Time Required.—The time required for tonsillectomy after the technic has been acquired is about fifteen minutes including the anesthesia. I have frequently operated on six patients in seventy-five minutes including the anesthesia. As soon as one child was finished it was carried out, the dressings of the operating-table changed and another child brought in and anesthetized. The best time I have made was four cases in forty minutes. Single cases are frequently anesthetized and tonsillectomy done in ten minutes.

This method is applicable to all sorts of tonsils, buried as well as prominent. It is strictly surgical. The tonsil is wholly removed and nothing but the tonsil. If for any reason a part of the tonsil escapes the snare as happens if the tonsil is not loosened up enough before applying the snare I find the small Tydings forceps useful in holding the fragment remaining while applying the snare to it. If this fails the piece may be removed with the tonsil punch. A tonsil hemostat is useful if there is persistent hemorrhage. I do not leave it on after the patient leaves the table. If bleeding is persistent and resists pressure the bleeding point is caught if possible and ligated. If this fails a sponge is placed in the tonsillar fossa and the anterior and posterior pillars sutured together over it. For this purpose I keep in readiness a Yankauer needle

for intranasal suture with the curved end set on the shaft at an oblique angle.

Indications for Tonsillectomy in Children.—1. Any tonsil large enough to interfere with breathing or voice production.

2. Any tonsil from which plugs of cheesy matter or pus can be pressed.

3. Any tonsil giving rise to peritonsillar abscess.

4. Any tonsil subject to repeated inflammation.

5. Rheumatism or joint infections.

6. Chorea.

7. Endocarditis

8. Tubal occlusion caused by enlarged tonsils. Only the first two can be diagnosed by inspection of the throat. I have frequently been surprised on removing tonsils that did not appear enlarged to find large masses of cheesy matter appear as the snare tightened. Since tonsils normally atrophy and almost disappear at puberty I have less hesitancy about recommending their removal at that time or later.

Results.—Tonsillectomy will not give a defective child intelligence but it will make a great many stupid acting children brighter. It is a common thing to hear that a child that was having difficulty keeping up with his class in school, who was getting grades of C habitually before tonsillectomy, and removal of adenoids, after the operation keeps up with his class easily and gets grades of A and B. Children who have had tonsils and adenoids removed eat better, sleep better and are more active physically and mentally than they were before. I have never seen any injury to the speaking or singing voice by a proper tonsillectomy; on the contrary, the voice becomes more resonant and is usually much improved. Whenever tonsils are removed adenoids, if present, and they are usually present when the tonsils are enlarged, should also be removed. It is usually a mistake to remove tonsils and leave adenoids behind as it is equally a mistake to remove adenoids and leave enlarged tonsils behind. The causes of enlargement of the one are the causes of enlargement of the other. When the operation is done as above described it is practically free from danger, and the good resulting is very great.

122 S. Michigan Avenue.

THE RELATION OF THE GENERAL PRACTITIONER TO THE FIGHT AGAINST TUBERCULOSIS

O. W. McMICHAEL, M.D.

CHICAGO

Dr. Richard C. Cabot of Boston, at the annual meeting of the State Medical Society of Wisconsin in June, 1911, said: "I know from my own certain knowledge that the vast majority of the physicians of Massachusetts cannot make a diagnosis of early tuberculosis, and I know that, not from what physicians or patients have said to me, but from my own supervision of these men under my own teaching. I have a postgraduate

course each summer where I see a good many men from my own state and from other states and I put them up against cases of incipient tuberculosis mixed up with normal cases and they cannot tell the one from the other. I do not believe one-tenth of the physicians of any state in the Union can tell incipient tuberculosis when they see it, from physical signs."

This is a severe arraignment of the medical profession, but before we declare it unjust let us look at the evidence.

More people die of tuberculosis than from all the other causes of death combined. The average duration of tuberculosis is four years, but the great majority of cases are not recognized more than a year before death.

In the Boston examining office of a Massachusetts state sanatorium for incipient tuberculosis two-thirds of all those who apply for admission are rejected because they are too far advanced.

In Wisconsin, out of 741 cases of tuberculosis only 468 were given a diagnosis of tuberculosis after consulting from one to nine physicians.

These statements and the testimony of sanatorium physicians everywhere sustain the indictment. The average physician does not make the diagnosis until the disease is far advanced. One of the principal reasons for this is that the diagnosis of incipient tuberculosis is an exceedingly difficult thing, and the general practitioner is not in the habit of making thorough physical examinations frequently enough to enable him to so familiarize himself with the normal that he can readily detect the abnormal. By thorough physical examination I mean one made with no clothing above the waist.

Another reason is that there has not yet been a general adoption of the use of tuberculin as a diagnostic aid, and a further reason is that physicians do not avail themselves of the facilities afforded them by the state and local health boards for the free and frequent examination of sputum. If routine sputum examinations were made of "bad colds" and "bronchitis," more cases of moderately advanced tuberculosis would be recognized in the curable stage.

The vigorous campaign inaugurated by the various antituberculosis societies has resulted in the education of the people to the point where they are beginning to demand of the medical profession an advanced degree of skill in early diagnosis, and if the profession is to hold its place in the respect of the public there must be a more general adoption of the newer diagnostic methods.

Now that there are so many institutions for the care of incipient cases those who are rejected because they are too far advanced will soon call to account the family physician who allowed them to reach that stage.

Since the antituberculosis societies are educating the people and the people everywhere are being urged to consult their family physicians the family physician must be prepared to render the service expected.

There are some medical men who have a feeling of antagonism toward the whole antituberculosis movement, and who feel that it is an invasion of the field of the physician. That it is such, is perfectly true and it is

an invasion rendered necessary by the attitude of these same physicians who have fallen short in their duty to themselves, their patients and the public. To themselves first because of their neglect of a department of medicine as important to their selfish interests as any other; to their patients because of their failure to recognize the significance of the minor ailments which are the early manifestations of tuberculosis, and to the public, because of their indifference toward a contagious disease.

This is the type of physician who curets a tuberculous gland and when healing is complete gives the patient no further thought. From the position of honor as the family physician and the guardian of the family health he has fallen to a lower plane and is a mere attendant on urgent need.

How many physicians who find tuberculous glands in a child on a farm ask the farmer if his cows have been tuberculin tested? How many physicians apply the von Pirquet test to the children in a family where there is a case of tuberculosis?

Tuberculosis, like the malefactor of great wealth, should suggest the question "Where did he get it?" When consulted on a case of tuberculosis we should be persistent in seeking out the source of infection. We should not be content with the information that the grandfather's great aunt died of consumption and call it "heredity." Let us look for the contact just as we would in scarlet fever. Oftener than we imagine the infection can be traced to some other case of the disease.

The most vigorous campaign conducted by an antituberculosis society cannot begin to compare in effectiveness with the results that can be obtained by a group of family physicians.

The antituberculosis organization which will accomplish most is a local medical society which will arrange for its meetings a series of clinical lectures and demonstrations of the methods of employing the various aids to diagnosis.

4 West Ontario Street.

TUBERCULOSIS OF THE PATELLA*

JOHN B. MURPHY, A.M., M.D., LL.D.

CHICAGO

I wish to cite to you to-night the results obtained in two cases of tuberculosis of the patella. Considering the frequency with which tuberculosis affects the other bones which enter into the formation of the knee-joint, it is surprising that the patella is so rarely involved. It is particularly surprising, in view of the fact that the patella is exposed and subjected to trauma more than any other bone in the body. Why should it escape tuberculosis? It probably escapes tuberculosis because of its peculiar arterial supply; it has no capillary loops in it; it has no line of demarcation between the epiphysis and diaphysis, as exists in the other bones of the knee-joint. When the patella is traumatized,

* Read before the South Side Branch, Chicago Medical Society.

there does not seem to be any tendency to the deposit of tubercle bacilli in it as is the case in other bones subjected to trauma.

In looking over the literature on the subject, I was astonished to find how little has been written on tuberculosis of the patella. I have compiled statistics, as near as I could find them, of all the published cases. There is about one case of tuberculosis of the patella to twenty or twenty-five cases of tuberculosis of the knee-joint. In one author's report it ranges from one case of tuberculosis of the patella to something like 200 cases of tuberculosis of the knee-joint.

When tuberculosis is present in the patella, it takes one of two courses. It may extend to the surface and rupture through the skin, forming a sinus leading outward from the tuberculous focus in the patella. The greatest tendency, however, is for the disease to pass inward and attack the joint. The patella is separated from the joint by a thin cartilage, and that cartilage readily yields as the tuberculosis approaches the joint. The tubercular focus ruptures into the knee-joint and causes a greater or lesser degree of synovial tuberculosis. It may involve the other bones secondarily.

During the time when excisions of the knee-joint were common, primary tuberculosis of the patella was reported by a number of authors. In recent times, however, when excisions have become less frequent, primary tuberculosis of the patella has disappeared from the literature.

In one of the two cases to which I wish to refer, the patella was almost completely destroyed by the disease. In the other case there was a pathologic fracture, with considerable separation of the fragments. One of these patients was operated on June 13, 1904. The patient gave a history of great impairment of the function of the knee-joint, which had existed for a period of four years, with pain and sensitiveness on pressure. In this case the patella became greatly enlarged. The enlargement of the patella is so pronounced in these cases that the primary or initial diagnosis in a large percentage of the cases has been sarcoma of the patella. But primary sarcoma of the patella is very rare. The pathologic picture of tuberculosis differs from sarcoma in the fact that there are a number of separate lesions, whereas in sarcoma there is but one disease focus in the bone. There were a number of foci of tuberculosis scattered throughout the bone in my case. In these cases we also have a pronounced hydrops of the knee. It is a secondary hydrops which also occurs in connection with tuberculosis involving the other bones of the knee-joint.

We now come to the important subject of treatment. What should we do for a case of tuberculosis of the patella? In figuring out the treatment of these cases I decided to adopt this plan: to make an incision along the outer side of the patella up into the vastus externus, removing the entire patella from beneath the aponeurosis patellæ, then dividing the quadriceps tendon by two parallel incisions extending upward from the patella for about 4 or 5 inches, then making a third incision uniting the two parallel incisions above and swinging this flap down over the site of the patella and attaching it by suture to the ligamentum patellæ. In the first case we had no inflammatory reaction following the operation.

There is perfect extension, and flexion to better than right angles. There was no edema, no swelling, nor is there anything in the patient's gait now which would lead anyone to suspect that he had had such a serious operation performed as the removal of his patella.

In the second case there was considerable swelling of the joint, with enormous enlargement of the patella, so that it appeared to be twice or three times its normal diameter. This patient, in walking up the steps one evening, stubbed his toe and suddenly he was unable to walk, having sustained a pathologic fracture of the patella from a slight trauma. There was much effusion in the joint. He was put at rest for a time, and preparatory treatment was undertaken for the operation. I believe that this preparatory treatment is most important in connection with these cases, and the question naturally arises, how can we prepare a knee-joint so that we can open it and do such work as we may deem necessary, and secure it against infection?

You will recall that in the management of fractures of the patella formerly, it was the practice to wire them immediately, but this treatment was attended with many disastrous results. So serious were the results, and so often did infection follow operation on the knee-joint, that primary wiring was abandoned. And then the plan of wiring these fractures ten or twelve days after the initial trauma, when the tissues had reacted, was resorted to as a means of repairing fractures of the patella where the separation of fragments was great. This gave good results.

In investigating why better results were obtained by treating these fractures ten or twelve days after the initial trauma, the explanation given originally was that the tissues, which had been recently traumatized, were not in a condition to withstand infection; that they were not in as good condition to withstand infection as in the case of a primary operation on the knee-joint, or not in as good condition to withstand an operation as after the occurrence of the traumatic inflammation. Why? Because following a traumatic inflammation, there occurs an intense infiltration; the bone is thickened, with cofferdammed lymphatics. The tissues have reacted to the traumatic inflammation, and offer the greatest resistance against microbic invasion. That, I believe, is the explanation, but it matters not whether that explanation is true or not, the results are the same.

Primary wiring of the patella has been abandoned, and secondary wiring of it has been considered a proper and legitimate operation. Formerly, acting in accordance with the principles of antiseptic surgery, we used formalin with iodoform and glycerin in the treatment of tuberculous joints; then we began the treatment of hydrops of the knee with injections of formalin and glycerin only, without the addition of iodoform. Later we carried on a number of experiments, injecting from 2 to 5 per cent. of formalin into the knee-joints of dogs. We found that a 2 per cent. solution of formalin injected into the joint of a dog produced edema, swelling and redness of the joint; that a 3 per cent. solution produced an intense edema; that a 5 per cent. solution produced necrosis

of the synovial membrane just on the edges of the cartilages, but that it did not produce extensive necrosis. In the treatment of hydrops of the knee, in the treatment of acute traumatic effusions, we found that the injection of a 2 per cent. solution of formalin was ample to cure the hydrops. In the acute infections of the joints, if the joint was aspirated and the pus removed, and the aspiration and injections were repeated every ten or twenty-four hours, depending on the degree of effusion, with three or four injections the suppuration would cease and the case would go on to recovery.

I mention this because it led to the plan we are following now in connection with operations on the knee-joint, and which was the one we resorted to in this case. A long time had elapsed since the occurrence of the fracture. We prepared the knee-joint by aspiration, and injected 3 drams of formalin solution, which produced a severe reaction in the joint. Shortly after this the effusion and pain subsided, and a week from that time we opened the joint, made an incision into the patella, severing the aponeurosis of the patella in front, and then did exactly the same operation which was done in the first case, three and a half years ago. There was no effusion into the joint after the operation. There was no filling of the joint. This was a common and rather annoying occurrence in cases of traumatism of the knee-joint or following operations on the knee-joint where the capsule was opened and the synovial surface manipulated. There was no elevation of temperature in this case; there was no inflammatory reaction, and we succeeded in getting the same good result that we obtained in the first. The operation was done September 21.

After utilizing the flap of the quadriceps tendon for this purpose, I began to use it for another purpose, namely, in cases of clean-cut fracture of the patella with failure of union, or a secondary fracture, with great separation of the fragments, so that it is impossible to secure their apposition. In fractures of the patella, even with ligamentous union, we can get fairly good results if the ligament is strong enough. That is very well illustrated in the case of a patient who is in the hospital now with another trouble. This patient sustained a fracture twenty-eight years ago. There is a great degree of separation of the fragments of the patella; still he walks around and has perfect use of his patella.

A most important matter in these cases is the preparation of the joint for operation. I believe we can so repair the joint that it will offer a maximum degree of resistance by inducing chemical inflammation, and I believe that such a chemical inflammation is best produced by formalin. In the original experiments with formalin injected into connective tissue, it was found that formalin produced a greater reaction in connective tissue than any of the medicaments in common use, except mercury, but mercury produces necrosis and brings about the physical characteristics of pus.

DR. MURPHY (closing the discussion): I desire to thank the gentlemen for participating in this discussion. I will now mention the technic a little in detail, as requested by Dr. Bevan. Two longitudinal incisions are made to the outer and inner sides of the patella, extending well up

on the quadriceps tendon and down close to the patella. These incisions are united at the upper end. Then you can bend the knee and by making lateral traction you can inspect all the bones of the joint. After that inspection I bring down the flap from the quadriceps tendon, so that the upper free end can be united to the patella, suturing it with kangaroo tendon, and not with wire. The technic of the former Dr. Harris has clearly pointed out to you. Local leukocytosis or local immunity is developed and the patient has a lessened resistance to infection. That is a law which does not concern merely the knee-joint. A medical student has a dissection-room infection from a prick of a needle. If he does not get local infiltration, his glands will become swollen, and he will have septic symptoms inside of twenty-four hours. A local coffer-damming from hemorrhage in the knee-joint is the reaction of the tissue, and microscopic examination of sections of the synovial membrane after a fracture, or after injection with formalin, will show you this local immunity as well as constitutional immunity to which Dr. Harris has referred, and which offers resistance against infection.

Formalin has another effect. I mentioned in connection with it that it causes what to disappear? Hydrops of the knee. You have, for instance, a chronic case of hydrops of the knee; the injection of formalin will cause it to disappear in a short time.

A patient from Bloomington was referred to me eight weeks ago with hydrops of the knee. The knee had been aspirated and injected with 5 per cent. phenol solution and with 2 per cent. formalin, and within two weeks complete absorption of the fluid had taken place. There was no further effusion into that joint; there was no further pain. This experience is not based on one or two cases, but on a large series of cases. In this case, following the operation, there was not the slightest effusion from the trauma of the operation; there was no swelling; there was no edema of the soft parts, and no effusion into the knee-joint, and this is largely due to the resistance that is developed by waiting in fracture cases. It lessens the inflammatory reaction, which everybody fears who has had much experience with knee-joint cases. I never open a knee-joint or do knee work without having a sense of fear of infecting it. I can operate on other portions of the body and feel about as secure as it is possible to feel, but in connection with primary operations on the knee-joint, and primary operations on many other joints, I know that the tendency is to cause effusion and thus increase the danger of infection after transudation has taken place. Local immunity must be recognized in every position of the body. You will remember that in the early history of asepsis we had some fear about attacking pathologic conditions in the pelvis. We were afraid to attack tumors in the abdomen, and you will remember how it taught surgeons to get the best results in cases that had some trauma or inflammatory condition. We do not wait for that in the abdomen or peritoneum, because we have there a membrane that has a maximum resistance; in the knee-joint we have a membrane that has medium resistance; the pia mater is a membrane that has a minimum of resistance. So far as the liability to infection and the

destruction effects after infection are concerned, in every case in which we can have an infiltration we have a cofferdam established, and we have conditions there which prevent the spread of inflammation.

DR. BEVAN: In that same connection, suppose, Dr. Murphy, you had a foreign body in the knee-joint, would you regard it as the best treatment to repair the knee-joint before you removed the foreign body?

DR. MURPHY: Do you mean a loose cartilage?

DR. BEVAN: Yes.

DR. MURPHY: Yes, if you can locate the loose cartilage, you have no trauma following your work on the joint, even though you may have to make quite an extensive resection.

THE ANTIFORMIN-SEDIMENTATION METHOD OF SPUTUM EXAMINATION FOR TUBERCLE BACILLI

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While the ordinary method of sputum examination is satisfactory in cases where the tubercle bacilli are found in sufficient numbers, it is deficient in cases where the number of bacilli in the whole specimen is limited. In a fair percentage of such cases the bacilli will escape detection.

Since the discovery of the tubercle bacillus by Koch, methods have been suggested by various laboratory investigators to overcome the failures encountered in the use of the old method of staining smears made from those particles of sputum which would seem most likely to contain the bacilli.

A few of these are briefly as follows:

1. Beidert's method consisted in adding 5 c.c. of distilled water to 15 c.c. of sputum, making the mixture alkaline with from 4 to 8 drops of sodium hydrate and boiling until the solution was homogeneous. After boiling, 15 c.c. of distilled water was added and the whole was sedimented. Smears were made from the sediment.

2. Czaplewski used 0.2 per cent. solution of sodium hydrate 12 parts, sputum 1 part, neutralized with acetic acid, boiled and then centrifugated.

3. Spengler diluted the sputum with an equal quantity of water, made it alkaline with sodium bicarbonate, then added pancreatin as a digestant. He kept the mixture in the incubator twenty-four hours at 37 C. and then sedimented.

4. Delg added a few drops of ammonia to the sputum, an equal amount of 25 per cent. sodium chlorid solution and centrifugated. The high specific gravity of the solution forced the tubercle bacilli to the surface where they could be drawn off by means of a pipet.

Better results have been obtained by the use of antiformin, a solution used in 1900 by Victor and Tornell for cleansing vats. Uhlenhuth in 1908 brought it into use in bacteriologic technic. He used equal parts of Javelle water and 15 per cent. solution of sodium hydrate. A similar

solution and giving equally as good results is the ordinary official Labarraque's solution prepared as follows:

Triturate chlorinated lime 45 gm. with 100 c.c of water, gradually adding the lime until a uniform mixture is obtained; filter and triturate the residue with 100 c.c. of water. Transfer the whole to a filter and add to the previously obtained filtrate. Shake, warm and filter. Wash and filter with 50 c.c. of water. Then dissolve 32 gm. of monohydrated sodium carbonate in 150 c.c. of hot water and add to the two solutions. The solution should be kept in an amber-colored bottle, rubber stoppered. The chief value of the solution depends on the available chlorin. It is used with equal parts of 15 per cent. solution of sodium hydrate.

The apparatus necessary is as follows: one-half dozen plain glass centrifuge tubes with corks to fit; each cork to be used once; a centrifuge; a porcelain jar of potassium bichromate solution. The centrifuge tubes should be kept in the potassium bicarbonate solution when not in use in order to free them from tubercle bacilli collected at any previous examination.

Sputum is collected for examination in wide-mouthed glass bottles containing 2 c.c. of 5 per cent. phenol solution and allowed to stand twenty-four hours before handling.

The technic of application of the antiformin-sedimentation method is as follows:

Using a centrifuge tube as a container, add 2 c.c. of antiformin to 10 c.c. of sputum, cork tightly and shake thoroughly until a homogeneous solution results. Centrifugate for five minutes or longer if necessary and pour off the supernatant fluid. Wash the sediment with normal salt solution and centrifugate again. This last step is repeated, the sediment being washed twice.

Smears are made from the sediment to which a loopful of albumin should be added. They are then fixed and stained with carbol fuchsin and methylene-blue according to the Ziehl-Nielson method. The stained specimen will show some distorted epithelial cells and granular débris staining blue forming a background which facilitates the search for tubercle bacilli. Elastic fibers may be demonstrated if present by staining with gentian-violet from thirty to sixty seconds.

Since November, 1910, on suggestion of Dr. Theodore B. Sachs, the medical director of the sanatorium, we applied the antiformin sedimentation method to all sputa which showed no tubercle bacilli by the ordinary method of sputum examination. The following results were obtained:

(a) One hundred and fifty-three specimens of sputum from 111 cases were examined by the ordinary method of sputum examination and no tubercle bacilli were found. The same specimens were examined by the use of antiformin and sedimentation; twenty-nine, or 17 per cent. of them showed tubercle bacilli. Out of 111 cases previously reported as negative twenty-four, or 21 per cent. became positive.

(b) Twenty cases, or 18 per cent. which showed no tubercle bacilli by either method, and no elastic fibers by the ordinary method of search-

ing for them, showed the presence of elastic fibers after the use of antiformin and sedimentation.

(c) Antiformin has strong germicidal properties. According to Patterson a 2 per cent. solution in five minutes will kill the ordinary bacteria found in sputum but it does not attack the tubercle bacillus owing to its waxy capsule. It is therefore invaluable in cultivating tubercle bacilli in pure culture from the sputum as first reported by Brown and Smith. This was successfully done by us in fifteen cases. Equal parts of sputum and 15 per cent. antiformin solution were mixed, thoroughly agitated and let stand one hour; centrifugated; sediment washed six times with sterile water and planted on Dorset's egg medium and incubated from fifteen to sixty days.

CONCLUSIONS

1. A larger percentage of sputum specimens are found positive by the use of the antiformin-sedimentation method than by other methods.
2. Antiformin plus sedimentation facilitates the search for elastic fibers.
3. Antiformin is valuable in the cultivation of tubercle bacilli in pure culture from the sputum.

NYSTAGMUS *

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Nystagmus is a term, like nutans, from a Greek root meaning to nod, to be sleepy, to nap, and is used to describe a peculiar, involuntary, oscillatory movement of the eyes. Usually the movement is bilateral and similar in both eyes, though occasionally one sees it only in one eye. It is mostly a lateral movement, sometimes rotatory, rarely vertical. I have seen a unilateral rotatory nystagmus, which is exceedingly rare. The oscillations are regular and rhythmical, as a rule, constant, though often elicited only by putting the ocular muscles on extreme tension. When there is no apparent nystagmus with the eyes fixed in the front position, it can be detected through the ophthalmoscope in the blurring of the fundi.

The nystagmic movements vary from sixty to two hundred or more per minute and extend over an arc of from one to ten millimeters. They cease during sleep. With vertical movements, and occasionally with horizontal, a slight synchronous movement takes place in the lids which must not be confounded with blepharospasm. Superficially these movements suggest a partial rotation of the eyeball around one of its own axes, depending on the alternate contraction of the opposed ocular muscles and due to a disturbance in some central coordinating apparatus. The symptom should not be confused with the voluntary restlessness of

* Read in the Symposium on Cerebellar Vestibular Nystagmus before the Chicago Medical Society, May 8, 1912.

the eyes, frequently observed in hysterics and people with little power of attention, nor with the so-called "searching movements" seen in blind eyes.

It is well to distinguish between nystagmus and pseudonystagmus. In the former the oscillations move, pendulum-like, back and forth through a given point while in the latter they proceed to and from a given point like a rebounding ball. Moreover, they are less regular, rhythmical and constant in pseudonystagmus than in true nystagmus. In pseudonystagmus they never occur in the front position, but only when the eye is turned, voluntarily or involuntarily, in one direction or another.

When acquired early in life the patients are not conscious of their nystagmus and are not annoyed with the apparent constant movement of objects; but when acquired later in life they are conscious of the jactitations and are harassed with the movement, for a time, of external objects. In addition to this apparent movement of objects nystagmus has associated with it other symptoms such as vertigo, at times nausea and vomiting, nodding movements of the head, diplopia, poor vision, photophobia and a tendency to read in vertical lines.

Four general types of nystagmus are wont to be referred to, namely, those due to certain local conditions of the eyes that interfere with vision, especially in childhood; those observed in albinism; the miner's nystagmus; and the forms that accompany various nervous diseases. This is an academic classification, useful in a way, but not very illuminating. Much more to the purpose would it be to differentiate the true from the pseudonystagmus and then, by close analysis of the phenomenon, try and correlate it with the pathophysiology of the condition in which it appears. This has been done lately by Barany and others with not a little success.

The character and bilaterality of the phenomenon point to a central explanation. No mere paresis or weakness of the peripheral muscular system is adequate to account for it. It is clearly a disorder of function and not the direct result of a focal lesion. This is sufficiently indicated in the fact that it occurs in cases with congenital visual defects and seems to occur, as Gowers remarks, most often even in cases of cerebellar tumor wherein there is impairment of vision from optic neuritis. *The function that is disturbed is that of coordination.* The tonic interplay between antagonistic muscles is broken up and transformed into a clonic interplay. As Duane puts it, there is a kind of imperfect or perverted fixation of vision. Normally in the fixation of vision the impulses to the opposed muscles are sent out simultaneously from both sides of the brain. In nystagmus these impulses are sent out alternately, revealing thereby a lack of central coordination. This alternate action of opposing impulses is shown by the remarkable case of cerebellar tumor with nystagmus, cited by Gowers, wherein analogous movements were noted in the pharynx and larynx, the rate of the movement being the same as that of the ocular, namely, 180 to the minute.

Indeed, no explanation of nystagmus to-day is acceptable, or even worthy of consideration, that does not rest on the function of central coordination and the maintenance of equilibrium.

The maintenance of equilibrium and the relationship of the body to its environment is a very primitive and universal function of the organism. In the performance of this function there must be on the one hand an appreciation, consciously or unconsciously, of space in all of its three dimensions and on the other hand a set of antagonistic, highly-toned muscles, ever ready to work coordinately to change the attitude of the body when called for by a change in the environment. The function is therefore one of correction and is ceaseless in its operation. It is a great reflex function and depends on a great and complex sensory-motor arc with a central controlling and coordinating ganglion. Like all the reflexes of the body this is in part perceived by and is in the power of the consciousness. Now what are the composite elements of this great reflex arc that subserves the function of equilibration? First, there are the innumerable afferent elements and pathways that carry sensory impulses toward the centers of coordination. The concept space is the psychologic correlate of movement and it is on the movement required to bring different afferent impulses into similar relationship with different stimuli that the idea of space is built up. All the afferent impulses, especially the kinesthetic impulses, as they are called, from the skin, muscles, tendons, articular surfaces, etc., underlie the conception of space. The retina is preeminently a space perceptor and in the semicircular canals is a very remarkable arrangement to correspond with the three dimensions of space. From all of these sources, especially the eye and ear, are pouring inward incessantly a complex mass of impulses in which the dominant feature is differentiation in harmony with the spatial differentiation of the environment or aggregate source of multiple stimuli.

The centers of the arc that subserve the function of equilibrium include the ganglionic gray masses at the base of the brain, especially the pontine nuclei and the cerebellum. Here the afferent, kinesthetic impulses, just referred to, are converged, brought into mutual relationship, unraveled, systematized, and coordinated, to be sent out again as efferent impulses for the stimulation of the appropriate muscles to accomplish the desired equilibrium. It is to be noted that the cerebellum, like the cerebrum, belongs to a superimposed reflex system and is not in immediate control of the musculature of the body. These great coordinating centers are purposive in action and stimulate the lower and direct centers that form the final common pathways to the muscles.

The entire musculature of the body receives ultimately and incessantly these systematized and coordinated impulses from the cerebellum and by reason of its remarkable arrangement in mutually opposed or paired muscular masses, constitutes the immediate agent for carrying out the ends of the great reflex arc of equilibration.

The cerebral cortex, wherein we assume the seat of consciousness is located, is external and peripheral to this sensory cerebello-motor

apparatus of equilibration. Occasionally only does it interfere to inhibit or supplement the latter's working when perchance the inpouring of inharmonious and disorderly impulses awakens in the consciousness feelings of distress, such as vertigo.

The discussion of the entire subject of the maintenance of equilibrium in its anatomic, physiologic and psychologic aspects, is too large for a single evening's session, but this brief reference to it is necessary to the further explanation of nystagmus. This evening the attention is to be concentrated on that part of the equilibrial reflex arc that includes the semicircular canals and the retina as the receptors, the cerebellum and other basal ganglia as the coordinating centers, and the ocular muscles as the peripheral apparatus.

As Dr. Ballenger will discuss the otologic side of the subject of nystagmus, I shall not refer further to the labyrinth in its relation to the function of equilibration, but outline briefly the anatomic basis within the nervous system which, as a part of the great reflex arc of equilibration, is involved in the production of nystagmus.

In the medulla are four nuclei from which the vestibular branch of the auditory nerve seems to take origin. They are known as the spinal vestibular nucleus, median vestibular, superior vestibular (nucleus of v. Bechterew) and lateral vestibular (nucleus of Deiter). These nuclei, of course, are the inner ends of the neurons whose outer ends are connected with the cristæ acusticæ within the ampullæ of the semicircular canals. From these nuclei other neurons pass to the cerebellar roof nucleus of the opposite side as the vestibulo-cerebellar tract. Others cross ventromedially in the tegmentum of the pons as arcuate fibers, bending upward and downward to reach other levels. Some serve as commissural fibers between the superior vestibular nuclei of both sides; some as fibers to the abducent nucleus; some as crossed and uncrossed strands to the posterior longitudinal fasciculi, by means of which the interconnection of the vestibular nerve with the third, fourth and sixth nerves is brought about; and finally, some as fibers to the spinal cord by way of the olivary bodies and lateral tracts, both of which are in connection with the spinal anterior horns. This rapid and superficial survey reveals the wide relationship of the vestibular nerve with many central and peripheral motor apparatuses. We here see at a glance that impulses from the cristæ of the semicircular canals, after passing through the vestibular nuclei of the medulla, reach the nuclei of the cerebellum and the cerebral cortex by both a direct and an indirect course, and that from these vestibular nuclei reflex impulses run by way of the medial fillet to the opposite nuclei of the motor cranial nerves, by way of the lateral and superior fillets to the quadrigeminal bodies, and by way of the olives and lateral columns of the cord to the anterior horn cells. The fact that concerns us more particularly to-night is that afferent impulses from so highly specialized an apparatus as the semicircular canals and efferent impulses to the muscular apparatus of the eyes are brought into the closest sort of relationship in the medullary vestibular nuclei and there subjected to the controlling influence of the cerebellum.

So important is the rôle of the cerebellum in the maintenance of equilibrium that a few words must be devoted to its anatomic connections and physiology. It receives and transmits afferent and efferent impulses from all parts of the body by way of its three peduncles. Its connections through the middle and superior peduncles are of special interest in the study of nystagmus. By the middle peduncles the cortex of the cerebellum is united to the nuclei of the pons and the opposite cerebellar hemisphere. The nuclei of the pons are in part the continuation of the gray matter which, in the medulla, is the origin of the motor nerves and the termination of the sensory. The pontine olive, for example, duplicates the lower or bulbar olive, receives impulses from the anterior nucleus of the acusticus nerve and reflects them on the nucleus of the sixth nerve. Moreover, these pontine nuclei are also in connection with the cerebral cortex of the frontal and temporal lobes.

By the superior peduncles the cerebellum is connected with the red nuclei, optic thalami and cerebral cortex.

The principal afferent paths of the cerebellum have been pretty thoroughly worked out. They are those related to the labyrinth and retina, to the cerebral cortex, and the peripheral organs concerned in the muscular sense. The efferent paths are less known. They include the fibers from the cerebellum to the posterior longitudinal fasciculi and thence to other centers, especially the ocular nuclei; and fibers to the cerebral cortex and the various centers in the mid-brain, pons, medulla and cord which subserve coordinate action of the ocular, skeletal and perhaps visceral muscles, as well as the great centers in the medulla such as the vagus, respiratory, vasomotor, etc.

As a general center the cerebellum has been shown to exercise the following functions in connection with the eyes and the labyrinth:

1. In bringing them together conceptually in the sphere of consciousness, with the aid of the cerebrum, and connecting them as parts of the great general apparatus of equilibration.

2. In controlling for the most part the movements of the muscles on the same side of the body.

3. In acting as a regulating reflex, through a wholly subconscious arc, in the maintenance of equilibrium.

4. In preserving the muscle tone so that the muscles are ever ready for instantaneous response to stimulation.

Enough has been said, I doubt not, to show the general constituent arrangement of the vestibulo-cerebello-ocular apparatus, which, in connection with certain tracts from the cerebral cortex and from the spinal cord, subserve the function of the maintenance of equilibrium.

Now comes the more difficult task of showing how the phenomenon of nystagmus is to be accounted for on the basis of this vestibulo-cerebello-ocular apparatus and the function of the maintenance of equilibrium. The difficulty of the task is more apparent than real, however. The theoretical explanations have been very largely confirmed by the elaborate and painstaking investigations of Barany, Byrne and others in recent years.

Theoretically, the oscillations of nystagmus represent a break in the alternate action of antagonistic muscles in their effort to restore equilibrium. If the cause of the break were on the efferent side of the equilibrial reflex arc, there would be more or less paralysis. There are no paralytic manifestations in connection with nystagmus and so we must look to the afferent side of the arc or to the coordinating center. The nature of the maladies in which nystagmus occurs lends strong support to this assertion. Troubles in which vision is affected, whether peripherally or centrally, injuries to the semicircular canals, cerebellar and pontine lesions, and degenerative diseases of the nervous system affecting its afferent paths are the ones prone to be accompanied by nystagmus. The spatial, coordinating apparatus being thus upset, incoordinate and more or less alternate and disconnected impulses are sent out to mutually antagonistic muscles of the eyes; an alternate action between them is set up; and the phenomenon is called nystagmus.

The alternate action of the pontine centers that cause the alternate spasm and relaxation of the mutually antagonistic muscles of the eyes is influenced by centripetal impulses from the retina, the semicircular canals and the conscious will. Inadequate control on the part of any one of these over the pontine centers, as in congenital eye defects, in labyrinthine disease, or even in volitional inefficiency, may easily be conceived as the cause of the breaking up of a nicely balanced contraction between normally opposed muscles and of starting them into an alternate clonic movement. With his usual philosophic insight Gowers says that "the manner in which nystagmus is produced by such varied disease suggests that its immediate pathologic mechanism must be some tendency inherent in the centers concerned. It is possible that these centers have a tendency to rhythmical or intermittent action which is normally counteracted, and that the counteracting influence is readily deranged." The recent work of Barany and his followers would seem to indicate that this counteracting influence originates very largely in the semicircular canals working in conjunction with the controlling and coordinating influence from the cerebellar nuclei and cerebral cortex. In other words nystagmus is potentially an effort to restore equilibrium, like the movements of the eyes in attempting to follow the telegraph poles from the window of a rapidly moving train, but due, unlike the latter, to a series of rapid, alternate, incoordinated impulses from within.

As neurologic symptoms nystagmus and pseudonystagmus are both valuable, but not as definite localizing signs in the absence of other associated signs. In the words of Grasset, "like all nervous symptoms which are always the expression of a disturbed function, nystagmus is a symptom of localization, though as yet the seat of the lesion cannot well be determined." It would seem to include the corpora quadrigemina, the optic thalami, the restiform bodies, the cerebellum and the labyrinth, all important structures in the functional maintenance of equilibrium. Both nystagmus and pseudonystagmus are found in a large number of functional, so-called, and organic maladies of the nervous system. Even normal individuals have exhibited nystagmoid movements of the eyes.

It is of some clinical importance to distinguish the true from the pseudonystagmus. For example it is pseudonystagmus that is almost constantly observed as one of the important symptoms of hereditary (Friedreich's) ataxia; and it is pseudonystagmus which is seen in 46 per cent. (Uhthoff) of the cases of multiple sclerosis, the true nystagmus noted in this disease occurring in only about 12 per cent. of cases.

It is usually a pseudonystagmus that is supposed to be so frequent in nervous diseases and is seen in such varied conditions as meningitis, meningeal hemorrhage, thrombosis of the sinuses, hemorrhage and softening of the brain, intracranial tumors, especially of the cerebellum, and disease of the pons.

As Uhthoff has shown, true nystagmus is very rare in diseases of the nervous system, occurring in only three out of 500 unselected cases. It is never seen in paralysis agitans and in only 1 per cent. of tabes. Among nervous diseases it is only in multiple sclerosis and syringomyelia that a true nystagmus is seen with any degree of frequency and even in these it is rare enough. A true nystagmus, not dependent on optical defect, nor congenital in origin, not due to occupation or ear disease, is all but positively indicative of disseminated sclerosis or syringomyelia.

Nystagmus of a transitory character has been seen in hysteria, spasmus nutans and traumatism. It has been observed in the course of uremic convulsions and during the exhaustion of status epilepticus. It is significant that when it occurs in early life and when it appears gradually in later life it usually accompanies those maladies of the nervous system that are degenerative in nature. In the former it may be that the central nervous system has failed to develop to its highest possibility its coordinating function, whereas in the latter the high development of this delicate and complicated apparatus has been damaged somewhat by the inroads of disease.

Byrne has recently declared that "it is possible to differentiate nystagmus of central cerebellar origin from that originating in labyrinthine disturbances, without the aid afforded by the other well known symptoms. The nystagmus of cerebellar origin is distinctively different from labyrinthine nystagmus. The latter has always a fast and a slow element and the movements are executed about a definite axis of the eyeball corresponding to rotations and movements in fixed and definite planes. In cerebellar nystagmus, on the other hand, the movements of the eyeball are prone to be more irregular and do not occur about any axis of the eyeball. They resemble more nearly oscillations back and forth that are irregular or are circumduction movements of the eyeball as a whole. There is an irregular incoordinated action of all or part of the muscles, but no set of opponents work together in such a way that the movements could be said to have a regular fixed direction as in true nystagmus. Moreover, voluntarily turning the eyes in a certain direction does not inhibit the movements as in labyrinthine nystagmus, though it may diminish them to some extent or develop abnormal movements." As Byrne well notes, some cases of cerebellar disease, due in part to irritation and in part to destruction, may exhibit a labyrinthine or true

nystagmus rather than a pseudonystagmus, but even here there would always be some element that would be atypical for labyrinthine nystagmus.

The following conclusions may be allowed from the preceding:

Nystagmus is a peculiar oscillatory movement of the eyes, dependent on disturbance within a central coordinating apparatus, and representing an effort on the part of such apparatus to restore the function of equilibration as it relates to the ocular muscles. Two forms of nystagmus are observed. They are easily differentiated. Both forms show implication of the great reflex function of the maintenance of equilibrium. True nystagmus, which is comparatively rare, is more directly due to implication of the semicircular canals. Pseudonystagmus, which is far more common and is seen in a great variety of nervous diseases, probably represents a more remote implication of the semicircular canals, if at all, though it probably always involves more or less the general sensory-motor arc that subserves the maintenance of equilibrium.

Columbus Memorial Building.

ACUTE INFLAMMATION OF THE THYROID GLAND*

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It has recently been noted by writers on this subject that investigation of the literature shows that very scant recognition has been given to acute thyroid inflammation, and especially by those in our specialty. It has been my experience that the laryngologist has a special opportunity to observe such cases. The almost barrenness of our literature on this matter attests to its comparative infrequency, but the subject is of absorbing interest because of the seriousness of many of these disorders and also owing to the difficulty in diagnosis.

An acute inflammation of the thyroid may take place in a gland perfectly normal, or in an enlarged or goitrous one. To distinguish the two, some writers designate the former as thyroiditis and the latter as strumitis. All or only a part of the gland may be involved in the inflammatory process. An accessory or an aberrant gland may be inflamed without the main or parent gland being particularly affected.

From the cases reported in the literature, it appears that the thyroid of the female is more frequently involved. It may occur at any age of life, although the greater number appear between the twentieth and fortieth year. It has been reported as occurring at times as an endemic. W. S. Robertson states that in Switzerland it is recorded as occurring as an endemic in school children and in France in a military garrison. It most usually takes place in an existing large gland and at times occurs in the course of pneumonia, influenza, eruptive diseases of childhood, typhoid, diphtheria, erysipelas, mumps, malaria, rheumatism, tonsillitis,

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lues and tuberculosis. It also has occurred after injury or operation on the neck. Such a case was reported to me by a colleague as following a laryngectomy and it terminated in death from the acute thyroidism. Lubbinski believes iodin may be a cause, although this is denied by Goldberger. De Quervain also believes in an iodothyroiditis, because he speaks of a bacterial and toxic variety.

The inflammation may terminate in resolution or go on to suppuration. In the latter the disease always assumes a more serious aspect; 60 per cent. suppurate, and of these 20 per cent. die (Lebert). A simple inflammation is only rarely fatal; while the suppurative variety is always serious and, as stated, quite often terminates in death. This is due to the prolonged sepsis and the occurrence of pus finding its way under the deep cervical fascia into the mediastinum, or by opening into the air or food tract. Should gangrene arise, which seems to be rare, it is always fatal. If the abscess formation tends to the surface, it is more easily evacuated and the disease assumes a less serious nature. Being a ductless gland the avenues of infection presumably are the blood- and lymph-streams. The nature of the microorganism is usually identical with that of the associated disease.

Robertson, in a collection of ninety-six cases, found that in forty-one suppuration resulted, and these occurred only in the pneumonia, puerperal, typhoid, diphtheria and erysipelas cases. Bahri reports a case of suppuration following influenza and Bauer one following scarlet fever, while one of my cases followed tonsillitis with a rheumatic history. Collet relates a case in an infant aged 18 months, following pertussis, the pus containing streptococci. Hager cites an acute non-suppurative thyroiditis of his own observation in connection with a duodenal ulcer. Typhoid appears by far the greatest etiologic consideration. McArthur states that out of seventy-three cases of thyroiditis, forty were typhoid complications. Trauma is also a causative factor, as the infection following the hypodermatic treatment of the enlarged gland.

The symptoms of an acute inflammation of the thyroid gland will vary somewhat with the absence or presence of pus. Both varieties have the usual symptoms of an ordinary febrile disease, like chilliness, high temperature, dry and hot skin, anorexia, constipation, at times nausea and vomiting and perhaps some headache.

These symptoms occurring as they do frequently during or at the termination of one of the associated diseases mentioned above, may lead to the belief of a recurrence of that particular disease. But when the following focal symptoms begin to appear suspicion should be aroused. Pain in the neck in or around the region of the gland, at times radiating towards the ears and the scalp back of the ears from pressure on the auricularis magnus nerve; pain on swallowing; the swelling in the front of the neck becoming noticeably increased in size so that movements of the neck are painful and to obviate which the head is usually held stiff with the chin down to relieve the tension; the pressure inward on the larynx and trachea may cause huskiness and even aphonia, cough and possibly blood-stained sputum, owing to a passive congestion and edema.

A pressure on the esophagus may even cause actual difficulty in swallowing aside from the pain incident to the inflammation of the neck. This is also the cause for the thirst. Vomiting with a slow pulse may be present from pressure on the vagus nerve. Sometimes a partial ptosis and corneal anesthesia are present from sympathetic nerve pressure. Atrophy of the remaining gland after a suppurative process has been reported as causing cretinism.

The diagnosis, particularly in the suppurative variety, may be difficult. A beginning thyroiditis may be confounded with any simple parenchymatous or colloid enlargement such as is frequently met with in girls at puberty or during menstruation or pregnancy, especially with an incidental occurrence of sore throat.

A case of Ludwig's angina seen by me resembled very much a suppurative thyroiditis, but the involvement of the tissue of the floor of the mouth in this patient determined the correct diagnosis, just as the absence of involvement of this area turned the evidence toward suppurative thyroiditis in another patient of mine.

Cervical adenitis accompanied by cellulitis has many characteristics of thyroiditis. Mumps and esophageal abscesses are mentioned by McArthur as simulating this disorder.

Thyroglossal and branchial cysts resemble somewhat this condition. I operated on such a cyst in a young boy in which there was fever, severe pain in the neck, great swelling in the mid-line, redness of the skin, fluctuation, rigidity of the head and difficulty in swallowing. On opening, nothing but a quantity of mucoid fluid was found within the cyst wall and on forcible injection of the cavity the fluid injected found its way along the patent duct to the foramen cecum at the root of the tongue. A second case was a lady, aged 31, complaining of chronic sore throat. She gave a history of having had a swelling over the larynx that was red and painful and accompanied by fever. The swelling was incised at that time, a year before, and a large quantity of pus escaped. A small scar in the median line now remained. The right faucial tonsil showed pus escaping from numerous crypts. The tonsils were not acutely inflamed, but buried and diseased. I removed them by dissection. Six months later she again consulted me regarding a swelling in the region of the old scar. It gradually increased and became very painful on swallowing and otherwise. The scar finally opened and a purulent discharge continued from the fistula for some months.

Disease of the submaxillary and sublingual salivary glands, especially with calculi, accompanied by infection and pus, may bring the diagnosis into question. Ranula is another one of those conditions which may have to be considered if the ranula is very large, but both of these affections always show marked involvement of the floor of the mouth, especially on palpation.

Quincke's disease, or as more correctly known, angioneurotic edema of the thoat, may be present as a symptom of the thyroiditis, and thus exaggerate conditions. Kyle refers to the high leukocyte count in this neurosis and considers it an aid in differential diagnosis. In this con-

nection it may be mentioned that Jeanselme has noted a marked increase in coagulability of the blood in cases of thyroiditis.

Hemorrhage into the gland had been recorded a few times and may simulate a sudden attack of thyroiditis. Bruening, in reporting such a case which resulted following the firing of a gun, refers to six other cases reported in the literature. Champion and Aldridge also report an interesting case that died within one and one-half hours following a fall from a tram-car. Dr. Cubbins, of Chicago, related a case to me of acute hemorrhage in the gland that recovered after operation.

A gumma of the gland may take on sudden activity and provoke some acute symptoms such as severe dyspnea, edema of the larynx, hoarseness and dysphagia, but this is the exception, judging from the few cases reported in the literature, about twenty in all.

Chondritis and perichondritis of the various causes like typhoid, lues and tuberculosis may have to be considered but other evidences of these diseases are usually so apparent that a differential diagnosis is not difficult.

A typical case of acute inflammation without suppuration that came to me was that of a young girl aged 15 years. Very suddenly and without any known cause the thyroid gland enlarged and as it rapidly increased in size it produced pressure symptoms, such as difficulty in swallowing, local pain, a huskiness (due to a mild edema of the intralaryngeal membrane seen on laryngoscopic inspection) that necessitated a "clearing of the throat." Associated with these were the usual symptoms of infection, such as chilliness, hot and dry skin, anorexia, constipation and headache. The temperature went as high as 102 F. and then gradually receded. The area of thyroid swelling increased, the overlying skin was red, glazed and very painful. The pressure symptoms increased so much as to interfere very disagreeably with swallowing, breathing and the voice. There was no vocal paralysis or stenosis from compression, only edema. General nervous symptoms were present such as fear, restlessness, accelerated pulse and respiration. Ice and kaolin paste were employed locally and after ten days she was well.

Another patient of mine, one of the suppurative variety, presented several interesting features. She was a young lady twenty-six years of age, with the following history.

She had been under the care of several physicians, two of them throat specialists, and also an osteopath, for eight weeks, but her trouble became progressively worse, suffering much and being greatly discouraged. At the beginning a swelling developed in the neck, slightly to the left of the mid-line between larynx and chin. It appeared rather suddenly and continued to increase. It remained circumscribed to this area and was painful. The trouble commenced with acute symptoms, like fever, a mild tonsillitis, soreness and stiffness of the neck; hoarseness of the voice being an early symptom. The dysphagia developed only in the last week or so. Owing to symptoms, referred to by the patient as rheumatic, most all of her physicians had been treating her for rheumatic laryngitis. There was no dyspnea or cough.

My examination revealed the features of a woman in much distress. There was evidence of much pain and in order to minimize this she held her head rigid. The pain even then was constant but became worse on swallowing and even talking and it radiated at such times toward and into the ears.

The anterior part of the neck was much swollen so that there was a straight line from chin to sternal notch. The skin was tense and somewhat glazed, the underlying tissue hard and painful and no evidence of softening could be deter-

mined. The temperature was 100 F. The oro-pharynx showed nothing abnormal. The base of the tongue and epiglottis appeared normal. The interior of the larynx was not inflamed although both ventricular bands were very much swollen, the vocal cords themselves being clean, white and freely movable. The floor of the mouth on palpation and otherwise, showed no involvement of the salivary or mucous glands in this region.

On the following day the patient was operated upon at the hospital by a transverse incision made over the region of the hyoid membrane. This site was selected because the onset of the swelling seems to have developed in this region; because of the swelling of tissue in the supraglottic region and not below, and finally, at the time of the operation, I found slight softening at this place, which was not made out the day before. Pus was encountered in considerable quantities undermining the tissues all about and very deeply. A curet was used for the purpose of securing some tissue for examination and this showed with the microscope evidence of thyroid tissue. The pus contained streptococci. A gauze drain was used for several days and a large quantity of pus continued to drain, but all other symptoms immediately improved so that ten days later the patient was discharged healed and well and has remained so now six months. I believe this to have been a case of thyroid inflammation first involving the pyramidal lobe.

I have seen this disease develop following influenza and tonsillitis but only exceptionally does the process go on to suppuration.

In one case an acute suppurative process developed, the result of direct injury. A boy riding a bicycle carrying over his shoulder the frame of another wheel; he fell from his wheel, the frame of the one he was carrying struck him in the neck over the gland, a severe edema of the glottis shortly followed which was relieved by local measures. The same evening, the gland began to swell and enlarge, became very painful and a temperature of 104 F. developed, with chills. All the local symptoms increased and on the seventh day an incision low down in the neck had to be made, and a small amount of pus escaped. After this his recovery was rapid.

The intralaryngeal and tracheal changes in the various affections of the thyroid gland are always of great interest and especially to laryngologists, but in the particular variety of thyroid disease under discussion the changes within this tract are not so numerous. Personally, I have never seen or authentically heard of cord paralysis as a result of thyroiditis, although hoarseness and even aphonia and dyspnea are frequently present, but they are due to the venous congestion and edema, the edema being usually in the supra- or infraglottic region, but not of the cords. Compression of the trachea is likewise not reported in this class of cases, while cough, "clearing of the throat," blood-stained sputum and laryngeal spasms are present in some cases.

32 North State Street.

DISCUSSION

Dr. Joseph Beck: I do not know whether Dr. Stein meant primary infection of the thyroid gland or general. I think Dr. Stein has presented an array of cases that do not fall to the average laryngologist. I wish to report a case that afforded a considerable amount of difficulty in handling. It was a case of secondary thyroiditis, following peritonsillar abscess, in which the peritonsillar abscess had passed along the anterior pillar and extended along the neck. The patient was a man aged 65 years. He was brought in from the Poor House to the Cook County Hospital for emergency work and he was distressed for breathing. I found a large swelling over the thyroid and the doctor from Dunning told him of his large thyroid before he had a peritonsillar abscess and they contemplated the removal of it.

In other words, this was an infection following a peritonsillar abscess, directly extending into the hypertrophied gland, or an ordinary goiter, and the man was now suffering from pressure on the trachea. The swelling extended away up to the hyoid bone and down to the sternum, and there was no place I could think of to do a tracheotomy without going through the thyroid gland tissue itself. His temperature was very high. I thought of relieving him by intubation, but he could not tolerate the tube and it was necessary to operate on him under a local anesthetic. I opened and found that within the gland there was not a distinct abscess, but infected thyroid tissue. I removed a piece for subsequent examination which proved to be an infection of the intercolloidal tissue. Here was a case of peritonsillar abscess neglected which probably caused this infection of the thyroid which extended along the neck.

I was forced to do this tracheotomy, with very gratifying results, however. The old man lived, but I do not know that he is any particular good to himself or any one, as he went back to Dunning. He is still alive and I have seen him several times since, now several months since the operation.

ANTERIOR POLIOMYELITIS *

J. H. BACON, M.D.

PEORIA, ILL.

The past few years have recorded a most wonderful advance in our knowledge of diseases of protozoan origin. Their importance is just dawning on the medical fraternity of this country and compromised among the newer ones are the hook-worm disease, mountain fever, pellagra and infantile paralysis.

The past of infantile paralysis, Heine-Medin disease or poliomyelitis is a record of death and deformity. The present, whose every moment is pregnant with new discovery, finds the same devouring Moloch holding sway. The future is rosy with the hope that medical science will soon add another to her increasing list of preventable diseases.

Our hopes must lie in prevention and complete eradication, for this disease is so difficult of early diagnosis, except in epidemic forms, that the majority of cases will not be recognized until the paralysis makes the diagnosis positive. No matter how efficient a remedial agent may be, sufficient time for it to act must elapse before the damage is done to be of benefit to that particular patient. It is this difficulty of early diagnosis and its continued endemic prevalence that make further consideration fitting at this time, although our knowledge is still fragmentary. In Illinois there were reported in 1910, 215 cases with seventy-seven deaths, and twenty-three deaths for the first half of 1911. These of course do not comprise nearly all, as it is not compulsory to notify and quarantine in this state.

Any authoritative discussion of this subject to-day must contain frequent quotations from Wickman, Landsteiner and Levidati, and in this country to Simon Flexner and his coworkers at the Rockefeller Institute. I feel sure that the monograph they issue next month will be

* Read at the Sixty-Second Annual Meeting of the Illinois State Medical Society, at Springfield, May, 1912.

as epoch-making as their previous efforts. On account of the so very extensive recent literature Poppin has been able to make a summary of 150 papers.

I will not detain you with a long dissertation about the more generally recognized symptomatology of the spinal form. After a general discussion of some of the more recent additions to our knowledge gleaned largely from experimentation on monkeys, I will direct your attention to some of the less frequent, although well recognized, forms of the diseases that have occurred in my experience, citing a few instructive cases of my own and others, and finally close with a plea for registration and quarantine.

Etiology.—The virus is individually so minute that it will quickly pass through the finest porous filter and so far has not been recognized microscopically, although it is more than probable that it is just visible. These characteristics among others indicate that it belongs to the lowest form of protozoan life. The virus will retain its activity after nearly two months of freezing and is very resistant to desiccation. Formaldehyd in 2 per cent. solution or quinin in large doses injected at the same time with the virus do not diminish its activity. Salvarsan injected both at and following inoculation does not protect. It is easily destroyed by heating or by 1 per cent. solution of hydrogen peroxid or menthol or 1/1,000 potassium permanganate. The disease as inoculated in monkeys is much more severe than in man, being nearly always fatal; however, it produces similar symptoms and the same lesions. Paralysis usually develops about eight days after inoculation, but varies from three to thirty. Recently the ability to inoculate guinea-pigs has been gained. One might expect the period of incubation in man then would be eight to ten days.

Pathology.—We have changed our ideas of the pathology in the last two years and now consider this among the general infections. It seems that the beginning process after the virus breaks through the outside barrier of skin and mucous membrane and gains entrance to the central nervous system is a dilatation of the blood-vessels with a resulting hyperemia of the brain, meninges and of the cord at all levels. Then follows a perivascular infiltration of the lymph-vessels with lymphocytes and edema of the surrounding tissues, resulting in a degeneration of the motor ganglion cells of the anterior horns and a lower neuron paralysis. As the hyperemia and edema diminish the ganglion cells least affected recover, the others become necrotic and the muscles they innervate become flabby and atrophy. Finally contractures of the opposing muscles develop.

Outside the central nervous system parenchymatous degenerations of the liver and kidneys and heart are usually found, sometimes with focal necrosis and groups of leukocytes. There is an acute inflammation of the entire lymphatic tissues of the body as well as the spleen and tonsils, with a partial destruction of the lymphocytes. A pharyngitis and bronchopneumonia may be present. The brunt is borne by the motor ganglion cells of the anterior horn in the brachial and lumbar enlargements.

Pathology of Cerebrospinal Fluid.—Before the paralysis develops, there is an increase of cells, that is, above 10 per c.mm. in the spinal fluid, which is under normal or slightly increased pressure and somewhat increased in quantity. These cells, according to six cases in the prodromal stage examined by Draper and Peabody, are chiefly polymorphonuclears. The fluid is usually clear or opalescent, and Noguchi's globulin test usually shows a normal amount.

After the paralysis has developed the lymphocytes predominate and may comprise the cell picture. Noguchi's test shows a gradually increasing amount of globulin as time elapses. Fehling's solution is reduced both prior to and after the paralysis. Fibrin clot may be present after standing a few hours. The blood picture contains nothing distinctive from other infections, unless it is a relative diminution of lymphocytes. There is a leukocytosis reaching as high as 30,000.

Portal of Entry.—The pioneer work of Flexner and Lewis, confirmed by numerous other investigators, leaves no doubt that the nasal mucosa may at least be one of the ways by which the infecting organism gains entrance. Recently Kling, Weinsted and Petterson have demonstrated the virus in washings of the sigmoid both in life and post mortem and have reported twelve positive out of thirteen inoculation experiments. Other experiments have found the virus in the lymphoid tissue, in the spinal fluid before paralysis and in the brain and cord after paralysis had developed. It has been found in the dust of rooms during the disease in virulent form and also weeks afterward. It has been demonstrated by inoculation experiments in the bodies of flies that had been fed on affected cords. Feeding experiments are positive in monkeys when the bowels are locked by opium. This makes the digestive tract a possible portal of entry also. We now know that the virus is present in excretions of the respiratory and digestive tracts no matter how the virus is inoculated. It is also present in the dust of rooms and in the bodies of flies; but does the virus usually gain entrance by these simple routes? It would seem not when we consider that two cases rarely develop in the same house, although the children play, eat and sleep together; that there are no reported epidemics among susceptible laboratory animals, although the sick and the well are caged together. In fact, it is rather difficult to get positive inoculation unless all conditions are perfect. This might show that there was either a relatively high immunity among most individuals or a great variability in the virulence of the virus; or further, there might be an intermediary host or insect carrier that was not always present. Flexner states that there is a variability of virulence that is demonstrated by inoculation experiments. Such a condition might be due to different stages in a life history yet to be determined, similar to those recognized in many other of the lower forms of animal life. In most diseases of protozoan etiology their propagation is closely connected in some stage with either an intermediary host or an insect carrier. Malaria has its anopheles, yellow fever its stegomia, sleeping sickness the tsetse fly, mountain fever the tick and pellagra the gnat, and by analogy we might infer that some insect carried this virus

from one patient to another acting both as intermediate host and carrier. This might even be true and yet have the positive inoculation experiments, although that seemingly militates against it.

Diagnosis.—The diagnosis after the atrophic paralysis is very easy even in the endemic form, but in the onset, when there are no distinctive features from any other infections, it is nearly impossible; as an example, in all of my cases there has been a marked hyperesthesia with backache and headache over the occiput. The same, however, is true of the onset of small-pox, so it is not at all distinctive, unless in an epidemic, when it would be suggestive at least. Since the inoculation experiments have shown that there are numerous different meningeal and cerebral forms as well as the common spinal-type the diagnosis is still more difficult and leads to the danger that many obscure acute meningeal and cerebral cases will be wrongly diagnosed.

Immunity.—On account of the epidemics of this disease occurring so recently and the ability to successfully inoculate the disease and perpetuate it in the laboratory at will being acquired still more recently, most of the problems of immunity are yet to be worked out. Most of our interest, as well as knowledge, have developed since the Swedish epidemic. So far investigators have worked with material containing the virus, and not with a pure culture, no one having been able to grow it artificially. It does seem probable that one will develop a strong immunity, and so far one attack rendered immune all monkeys from repeated inoculation. Serums from cured individuals ought then not only to be protective, but curative. Such seems to be the case to some degree, where tried, but has yet to be more thoroughly investigated. However, in man there have been reported a few authentic cases of what apparently seems to be a second attack.

Treatment.—No new methods of treatment have been brought forward recently. Hexamethylenamin has been suggested and tried because it is secreted as formaldehyd in the cerebrospinal fluid, yet formaldehyd is strongly resisted by the virus. However, Flexner reports that it delays the onset and causes a less severe attack in monkeys, but in no way affects the severity after the onset of the disease. The use of a hydrogen peroxid spray would seem a very rational procedure, as a 1 per cent. solution rapidly destroys the virus. On account of the short course of the disease, one would be led to believe that immunity is established early so if some drug could be found that would inhibit the reproduction of the infecting organism for only a few days Nature then would hold the whip hand. As this disease resembles rabies in animals it has been suggested that graduated injection of a cord attenuated by desiccation as in the Pasteur treatment would also bring about an immunity, but in rabies we have a disease following a definite type of injury with a long incubation period. In poliomyelitis we have no means at present of detecting the initial lesion where invasion takes place; then we have a disease with a probable incubation of eight days as against nearly a month in rabies. Such active immunities are usually slow of development, but

of longer duration. They might be of great benefit to an affected community if given to large numbers early. But it is difficult to enforce such police powers that interfere with the personnel of the individual, unless the vaccination be mild, without harm and conveys a lasting immunity, before a sufficient number would submit to make it practical. After the onset we are more liable to get real benefit to the individual from a serum that would act immediately after injection, but this must be done before the paralysis, as that marks the culmination. At present we must depend largely on careful nursing, mechanical therapeutics and the effect of certain drugs to meet symptoms as they arise and maintain a general attitude of watchful expectancy, protecting the rest of the family with hexamethylenamin and nasal douches of 1 per cent. hydrogen peroxid and alkaline gargles.

There is one procedure that has but recently been perfected and that is the insufflation method for artificial respiration when paralysis of respiration develops. Heretofore such patients have died when the available oxygen has been exhausted and those in attendance tired out. With this method available it will be possible to maintain respiration for days if necessary, giving the hyperemia and edema of the respiratory center time to abate in hope that respiration will again be resumed. Knowing that the crisis is past and judging from the improvement that takes place in the condition of the cord we have a right to assume that such improvement will also take place in the medulla.

Classification.—We cannot do better to-day than to accept the classification of Wickman. He divides this disease into eight types; these are not always clinical entities, but gradate into each other.

1. Spinal form. This comprises probably from 60 to 80 per cent. of the cases.

2. Ascending form, which resembles Landry paralysis if it is not identical with it. It is progressive in type and may be either ascending or descending.

3. Bulbar or pontine form, which involves the cranial nerves and may also include the spinal form.

4. The cerebral or encephalic form.

5. Ataxic form, which involves the cerebellum.

6. Polyneuritic form. This form is frequently diagnosed as rheumatism.

7. Meningitic form. This frequently resembles epidemic cerebral meningitis, and may also be hard to distinguish from tuberculosis.

8. Abortive type. This does not leave any paralysis remaining after a few weeks.

I will give you examples of the Landry type, the cerebral type and the abortive type.

Landry's Type in an Adult. Case 1

Clarence F., aged 23 years. Family History: father nervous; one sister bright and normal; other has speech defect and retarded growth.

Personal History: Very nervous disposition. Infection of foot a year ago. No recent injury. In western Virginia for six weeks in farming districts till

one week ago. Has had a tired feeling in back which he laid to his occupation and frequent change of bed. Complained of this but otherwise felt well and ate heartily. Been smoking freely last few days. Has been worried over financial matters recently.

Present Illness:—On Sept. 9, 1910, had pain in back over tenth rib of right side and consulted a doctor who diagnosed it intercostal neuralgia. Was relieved quickly by phenacetin, and went to a dance next day and felt very well. October 2, although not feeling well went to the house of a friend for evening meal and ate heartily of salmon salad, of which several ate, but the others felt no bad effects. Brought home sick about 9:15 p. m. Went to bed but could not sleep as he was too restless. I was called at 1 a. m., October 3. Found a well-nourished young man lying in bed. He was very restless and did not lie in one position long. Color normal. Temperature, 101; pulse, 90; respiration, 22. Head examination negative. Neck and back normal except sore over four last ribs on right. No tender spots along the spine, or along intercostal nerves. Lungs and heart normal. Sore over ascending colon and at pit of stomach. Reflexes all over body exaggerated. Vomited during the examination. Vomitus contained evening meal, considerable fruit and salmon. No blood; sour. Seemed easier and said he felt relieved. Cold compress to head. Hot water bag to abdomen and back. Soda bicarbonate and charcoal.

9 a. m. Had vomited since last visit and was still nauseated. No soreness on pressure over McBurney's point. Throat felt sore; slight redness of pharyngeal mucosa; no exudate. Head and back still aching but some easier than on first visit. Still worried about some personal matter. Given mercury biniodid, gr. 1/8. Temperature, pulse and respiration same as in morning.

7 p. m. Had sat up in chair most of day and was restless, but wanted to sleep. Back still annoying him considerably and slightly sore to pressure. No vomiting, no bowel movement. Given Hincle pill and heroin, gr. 1/12.

Tuesday, October 4, 9 a. m. Had slept well until 1 a. m. Afterward was restless and tossed. Slept some in the morning. Some nausea. Ate some. Abdomen clear. Backache slight. Still restless and heavy feeling in back of head. Throat normal. Salts: acetyl sal., gr. 5 q. 4 hours.

7 p. m. Still weak and nervous. Been up in chair part of day. Bowels moved at 5 p. m., large and well formed. Walked to toilet. Head ached when moved, but better. Family thought further visits not necessary. Given strychnia 1/60 gr. and quinin, gr. 15.

Wednesday, October 5, 6:30 a. m. Called back. Slept well until 11 p. m. Had to be helped to bath room, as he could not use legs, although he could move them some. Father told him he was a baby and not to give up. But still he had to be helped. He went to sleep which lasted until 1 a. m. Wednesday morning, afterward restless, moving from one side of the bed to other with help. Complained of pain in back of head. Used hands all right. Wanted to go to a wedding that evening. Very much worried about it. I found him rolling from one side of bed to other. Hardly getting settled before asking to have his legs moved. He complained that he could not use himself, and that he was very weak. Had an anxious expression. Could use hands but with less power. Could not use legs at all when taken to jar, and they dangled limp. When placed in bed he could rotate legs slightly and extend toes. His reflexes were all present. Those above the waist line were exaggerated. Breathing was becoming somewhat difficult. Could roll over in bed but had to have some one move legs which were limp. Fibrillary twitching in all muscles above waist. Kernig absent, also Babinski. Gradually reflexes above waist become more marked. Temperature, 98.6; pulse, 95; respiration, 25.

8 a. m Temperature 98.6. Muscles above the waist becoming rigid. Sensations were everywhere present. Dyspnea becoming more marked and cyanosis developing. Sweating over face and chest profuse, rather clammy. Complained of being tired and that breathing was difficult. Chest oppressed. Headache severe. Was very nervous. Very anxious expression on face. Mental tension

extreme. Kernig's sign still absent. Transient strabismus. Could see and hear normally. Swallowed water, which he frequently called for. No nausea. Mind clear and active. Pulse becoming more rapid. Rate between 100 and 90. First consultant saw him at this time and thought first it was strychnin poisoning and then changed to belief that it was tetanus, although no history of any injury was obtained or wound found on examination. Was given 10 grains of veronal and 20 grains bromids in two doses by mouth. He could drink and take nourishment and talk but his voice was husky. He talked some in answer to questions mostly, but with difficulty. Cried and said he was so nervous and unless he was given something would go crazy.

9:30 a. m. Room was kept quiet. Seemed a little quieter for a few minutes at a time. Sedatives were given a chance to act but having no marked effect he was given chloroform and he dropped into a dose only to awaken when it was removed. The chest was held rigid. The respiration became very shallow and labored. Speech became more difficult. The legs gradually became rigid.

10 a. m. Chloroform was given intermittently with some relief. I telephoned for oxygen as complete paralysis of respiration seemed imminent at any time.

11 a. m. Was placed in hot pack for ten minutes and he became very cyanotic and it was discontinued. Respiratory movements were so poor that they were reinforced artificially. Suddenly they ceased altogether at 11:20. Temperature, 98.6. Risus sardonicus intermittent. Could talk with difficulty and able to drink. Conscious. Pupils normal and reacted normally. Neck stiff. Head ached; cyanotic. Abdomen contracted in expiration.

12 noon. Spinal puncture of 35 c.c. of clear fluid under normal pressure. No pus cells. No bacteria. Slight fibrin clot after 24 hours. Few mononuclears. White count, 14,000. Patient grew steadily worse. Cyanosis increased in spite of artificial respiration and oxygen. Conscious to end, and swallowed water although it sometimes did not go down. Mouth slightly open. Made movements for us to continue if we left off our endeavor. Died at 3:30 p. m., heart dilating.

Abortive Cases.—From the laboratory has come the confirmation of the reports of the clinicians of an abortive type of the disease leaving no paralysis. When one considers there are numerous abortive cases which are never diagnosed and are privileged to run at large unrestricted, the missing link of the apparently isolated case can readily be imagined. The following is a suggestive case history at least, though some may question my diagnosis. And I might add here that recently a means for the after-diagnosis of these cases that will nicely clear the situation has become available. The serum from such cases will materially protect monkeys at time of inoculation.

Case 2.—C. D. Family history negative. Personal history: Never had serious sickness; nervous for last two years; constipated. Present illness: I was called on July 14, 1911, about noon to see a telephone operator. October 23. Found a well-nourished young woman in bed complaining of severe aching in back and upper half of abdomen, also severe headache. She gave a history of not being well for three days previously and had been having similar pains the day before only not so severe. The day previously she had taken to bed about noon. During the forenoon she had vomited.

Afternoon. Patient extremely nervous. Mind clear. Skin clear. Face flushed. Pupils reacted normally. Slight reddening of pharynx but throat not sore. Slight stiffness of neck. Patient complains if neck is bent. Heart and lungs negative. Indeffinite soreness on pressure of abdomen especially on upper right quadrant which seems slightly tense. Able to move hands and feet but complains of stiffness of right leg. Reflexes exaggerated. Right knee kicks higher than left. Bowels moved during morning. Temperature, 101; pulse, 90; respiration, 24. Urinalysis: specific gravity, 1.017; clear, acid, trace of albumin; no casts, blood

or pus. Gave hexamethylenamin, 10 grains every 4 hours; aspirin, 5 grains every 3 hours. Sponge bath and hot water bag to the abdomen.

5 p. m. Patient's condition remains about same except she cannot walk. She is able to move right leg with difficulty. Leukocyte count, 11,000; temperature, 102; respiration, 24; pulse, 110. Reflexes exaggerated. Kernig's, negative.

9:50 p. m. Only apparent change in patient's condition is movements of right leg are performed more readily. Temperature, 104.4; pulse, 120; respiration, 26.

Consultation at 11:30 p. m. with Dr. S. M. Miller. No definite abdominal condition was found to explain pain and tenderness. Possibility of appendicitis was discussed but location of pain rather high and quite variable. A kidney lesion seemed possible, but the lack of blood, pus, and casts in urine, also no previous history of kidney trouble, were against this. A ruptured duodenal ulcer might cause a similar condition, but no previous history of stomach trouble also bore against this, but not ruling it out entirely. Similarly hemorrhagic pancreatitis and empyema of the gall-bladder had to be considered. Pleurisy and diaphragmatic pneumonia sometimes are the cause of pain in the upper abdomen but were ruled out here on account of having no physical fluid findings in chest to support this view. No special pain or respiratory movements and low respiratory rate. While not having the spinal fluid to help in making the diagnosis, yet the apparently developing paralysis of the right leg seemed to make the diagnosis of infantile paralysis the more probable one.

July 15. Patient's temperature and pulse are normal, there is still some soreness in back and on movement of right leg. The leg movements are normal except extension of feet and knees are weak.

July 16. Patient seems about normal, able to be up and around and walk apparently quite normally.

Status Præsens: The right leg readily goes to sleep in sitting posture. Seems as strong as before attack. The patient states that she was never bothered with trouble like this before attack.

Cerebral Forms of Poliomyelitis: "Koplik." Case 3

L. D., male, aged 5 years. Has had rachitis, scarlet fever and diphtheria. Three years ago had scarlet fever and diphtheria. Tonsils have been removed.

Family history negative. Five weeks before admission to hospital, was taken with high fever, headache and prostration. The fever apathy continued for two weeks, during which time the child vomited frequently. The fever then ran a lower course, and the child became somewhat brighter but complained of severe headache, vomited occasionally, and was constipated. The patient complained of pain in the right eye and right hand. There have been no convulsions. The child is quiet but parents think it does not sleep. There is sighing respiration.

Status Præsens. The patient is soporose, although he answers questions. There is a slight rigidity of the neck, and a tendency to yawn. There is some hydrocephalus on the right side. The reflexes are exaggerated. The pulse is equal, regular; no paralysis noted of any kind. There is slight neck rigidity, tâche cérébrale, signs of hydrocephalus on both sides, later on abdomen retracted, a constant tendency to yawn, left internal strabismus, patient soporose but conscious when aroused, no evident paralysis. A lumbar puncture yielded 30 c.c. of clear fluid under some pressure. A day subsequent to admission the patient was brighter. An examination of the fundus oculi revealed some small retinal hemorrhages suggesting compression of the cerebral retinal arteries, but no choked disk.

Five days after admission, patient was conscious with the above ocular palsy, but interested in surroundings. Some exaggerated knee-jerk. On walking, patient shows some tremors. Complains of headache, is apathetic, pupils uneven, right larger than the left. Four days subsequent still apathetic and complains of headache. A second lumbar puncture four days after the above entry yielded 40 c.c. of clear fluid under same pressure.

Two weeks after admission the patient was still apathetic, soporose with neck rigidity and showed slight flatness of the right side of the face. Eyes examined by Dr. Hay, at this time, showed optic nerve atrophy, so-called postneurotic atrophy with hemorrhage in the retina. The patient was brighter but there was still some neck rigidity and signs of hydrocephalus.

After four weeks the patient was able to be out of bed. There was some mental obtuseness, marked signs of hydrocephalus, no blindness, there was a distinct ataxia or cerebellar gait, mentality continues below the normal. The patient was up and about without temperature; played with other children.

Puncture fluid examined shows no bacteria; 100 per cent. lymphocytes, some reaction for sugar and albumin.

Von Pirquet tuberculin reaction negative. Blood showed 12,000 leukocytes, with a differential count of 51 per cent. of polynuclears on admission. On discharge or near that, the count was 8,000 leukocytes. The temperature was normal after the first twenty-four hours stay in hospital, with the exception of a rise in temperature due to an injection of serum of Flexner given as a safeguard, should examination of the cerebrospinal fluid show meningococci. Discussion. This is a typical case of polioencephalitis resembling very much a tubercular form of meningitis. There were slight rigidity, stupor, hydrocephalus, and low leukocyte count. The history, however, showed an acute onset five weeks before admission to the hospital.

The puncture fluid also showed fully 100 per cent. of lymphocytes, a fact which might very well be linked with tuberculosis. The child was discharged from the hospital, however, well with the remains of the encephalitis in the form of hydrocephalus and impaired mentality. The only paralysis during the illness was occular.

Comparative Medicine.—One point that has appealed to me since I have been interested in the study of this disease, is our ignorance concerning the domestic animals with which we are daily in so close contact. There is hardly one that has not had attacks of paralysis that have occurred either before or at the time of epidemics. While no relationship has as yet been traced between those epidemics of paralysis in our domestic animals, they are at least suggestive and show the need of a more thorough study of their diseases, and the instruction in comparative medicine in our schools to-day, so that the medical students of the future will not be as ignorant as we are.

We know sufficient now to demand the thorough destruction of all excretions, a thorough fumigation of the room occupied by the patients and all of its contents and as complete a screening of the house from flies and all insects as possible. Our experience with other infectious diseases further demands that there must be registration and quarantine if we are to get results. The registration will put the medical fraternity on their guard and will influence the laity to call in a physician in all slight fevers and minor ailments at their onset, for this is a disease most families dread. On the whole it will give the physician a chance to see the cases earlier and many of the mild cases will have attention that would otherwise be neglected. Cases should be charted by health departments and sources of infection traced.

The quarantine will eliminate the danger of spreading the disease by contact, no matter how small it may seem at present. The long persistence of the virus in the nasal mucosa of some cases makes a quaran-

tine of about a month necessary. If all of the mild, abortive cases and chronic carriers were known the manner of spread would then be more easily discovered.

We are bound to continue these precautions until the means of spread of this contagion is known, and then only can we fight with precision.

TREATMENT OF CANCER HIGH IN THE RECTUM *

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Modern surgery of cancer high in the rectum begins with the development of the sacral route by Kraske in 1885. Volkmann first suggested an abdominal incision in combination with the sacral route to determine the extent of the disease. Koenig was the first to report an operation of this type. In this instance he removed the entire rectum and brought the end of the bowel through the abdominal wall to form an inguinal anus. Some years later Jeannel employing the combined or abdomino-sacral operation, removed the rectum and brought the sigmoid down to the anus with sphincters intact.

Recently the sacral and the combined routes have each had earnest supporters. Most prominent among the advocates of the purely sacral operation is Hochenegg of Vienna. French surgeons and some of the younger German operators advocate the abdominal incision to tie off the superior hemorrhoidal artery and to determine the extent of the disease. More recently there has been a growing tendency to employ the combined operation. Kraske, in a recent paper, advocates the combined method in selected cases — those in which the tumor lies high in the rectum.

No single operative procedure for all cases of rectal carcinoma should be advocated to the exclusion of all other methods. Each case should be studied with the possibilities of permanent cure, the mortality rate and a functionating anus or the best substitute in view. The perineal, sacral and vaginal routes are best employed in early low-lying growths in which sphincter control can be preserved. Advantages of the sacral route are: (1) Rapidity — the operator is at once on the region of the disease; (2) danger of infection lessened when peritoneal cavity not opened; (3) time to complete operation less than by combined method.

The disadvantages are: (1) A bloody field from hemorrhage difficult to control; (2) extent of disease not readily determined because of the bloody field, infected glands high up escape notice or are out of reach; at times when operation is about completed it is finally seen that the disease is so extensive that no operation could be sufficient to complete removal; interference with the blood-supply of the stump in such manner that gangrene of the bowel follows with death by peritonitis; (4) often the bowel cannot be drawn down and a sacral or gluteal anus must be resorted

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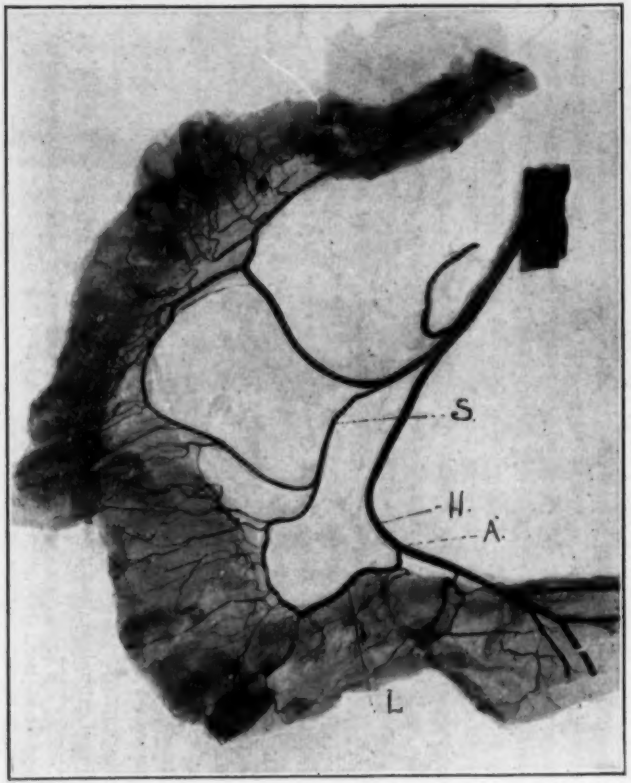

Fig. 1.—S, sigmoid artery; H, superior hemorrhoidal artery; A, critical point; L, last loop of marginal artery.

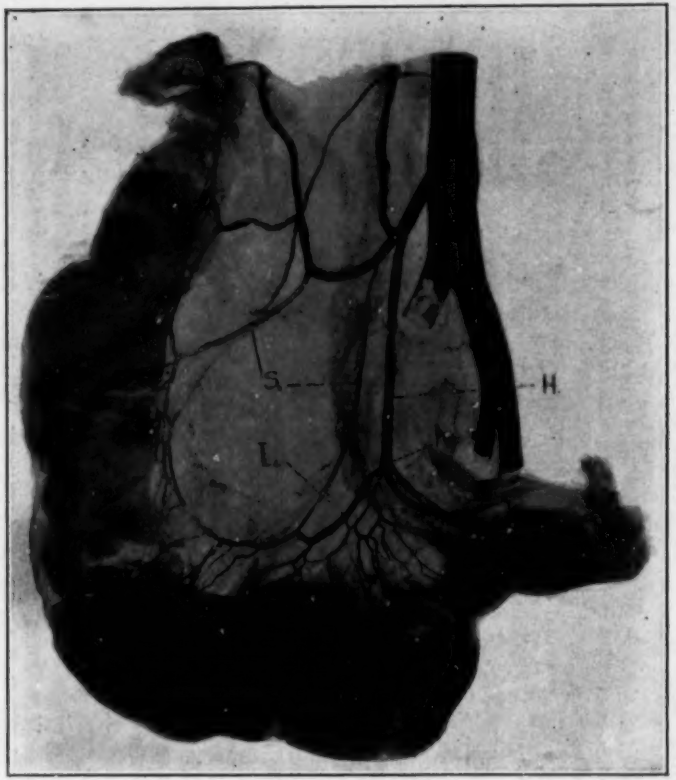

Fig. 2.—S, sigmoidal arteries; H, sup. hemorrhoidal artery; L, anastomotic loop; A, critical point.

to. I recall one case operated on by the sacral route where I found the disease so extensive in the pelvis after removal of most of the rectum that excision could not be considered, and the patient, after the ordeal of a severe operation, was not improved. Distant metastases in the liver and other abdominal organs may not be palpable through the abdominal wall and are not discovered until the end of the sacral operation when the peritoneal cavity is opened, or may not be observed at all.

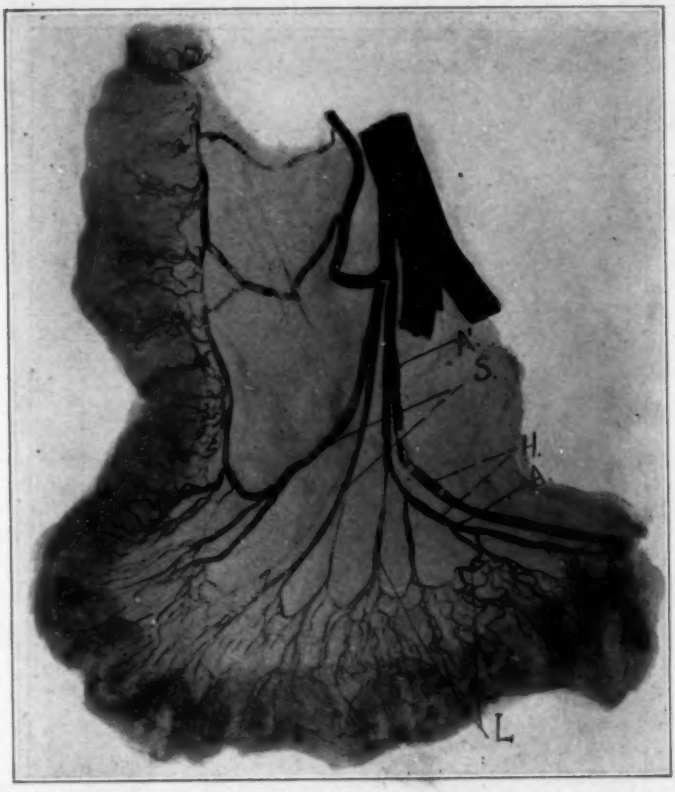

Fig. 3.—H, sup. hemorrhoidal artery divides above anastomosis with loop L from marginal artery.

Ligation of the superior hemorrhoidal artery to free the bowel and permit the descent of the sigmoid is followed by gangrene of the stump when the ligature is improperly placed. Following a suggestion by Sudeck, I injected and made *x*-ray photographs of the recto-sigmoidal anastomosis in twenty-one subjects. Figure 1 is the most simple arrangement found. The sigmoid artery, *S*, anastomoses with the superior hemorrhoidal artery *H* by means of the last loop *L* of the marginal artery. A ligature on the hemorrhoidal artery below the point of union at *A* results

in death of all of the bowel which receives its blood-supply below the level of the ligature. If the ligature, on the other hand, is placed on the hemorrhoidal artery above the critical point *A*, then the circulation is maintained by way of the sigmoidal and marginal arteries. Variations in the relations of these arteries are shown in Figures 2, 3 and 4. In Figure 4 there is no distinct loop; a ligature placed at any level on the hemorrhoidal artery would almost certainly result in gangrene of the bowel and death of the patient. Figure 5 is an injected specimen removed

Fig. 4.—There is no well-developed loop. "L" is an insignificant vessel in this specimen.

at autopsy showing gangrene of the bowel following ligation at the point indicated by the two arrows.

In cases where the bowel, because of anatomic relations, cannot be drawn down to the sphincters, or where the sphincters have been removed, it is necessary to create a sacral or gluteal anus when working by the sacral route. This procedure is advocated by Hochenegg and is as strongly condemned by some of his own colleagues, among them von Eiselberg.

With a sacral anus there is a tendency for the fecal current to pass straight on down the bowel as the convolutions of the rectum and lower sigmoid are pulled out in the attempt to bring the gut down. This results in greater incontinence of feces than when the inguinal anus is used. After the first psychic shock has passed, the patient is in far better control of the situation with an anus formed by drawing the bowel through the rectus muscle and then along a subcuticular path permitting of a compressing pad on the abdomen (Fig. 6). The patient can see instead of feel his condition and can manipulate his controlling apparatus far more satisfactorily. With an inguinal anus or colostomy a loop

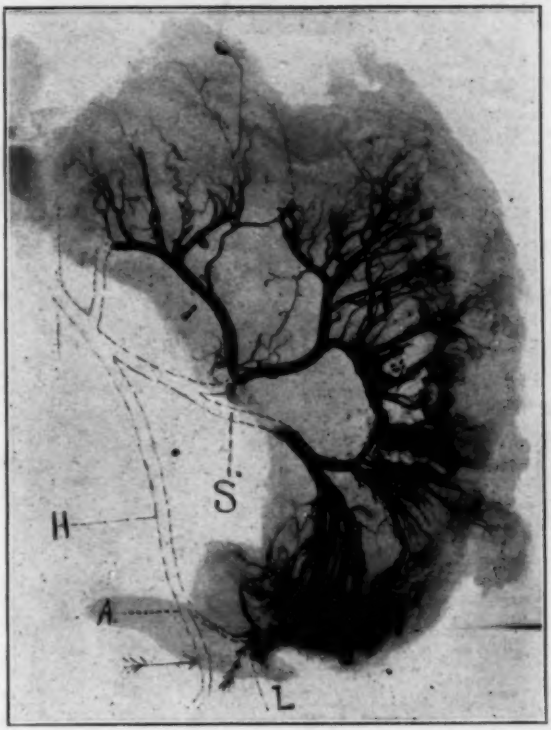

Fig. 5.—Specimen removed at autopsy. S, sigmoidal artery; H, hemorrhoidal artery; L, loop and last arcade of marginal artery; A, critical point. Arrows indicate locations of ligatures which resulted in gangrene of bowel and death of patient.

descending beneath the level of the anus may be left acting as a trap to accumulate feces. The inguinal anus, of course, can be done only by means of the combined abdomino-sacral operation. Another advantage of the combined procedure is the determination of the extent of the disease early in the work.

Since beginning this paper, on making the preliminary abdominal incision in a patient with rectal carcinoma, I found numerous small

metastases in the liver and immediately closed up without any attempt at removal of the primary growth. More thorough removal of diseased bowel, glands and fat from the level of the promontory down may be effected by the abdominal incision. Operating from below alone there is a constant tendency to leave as much bowel as possible looking toward final repair. Working from above, one has plenty of healthy bowel to

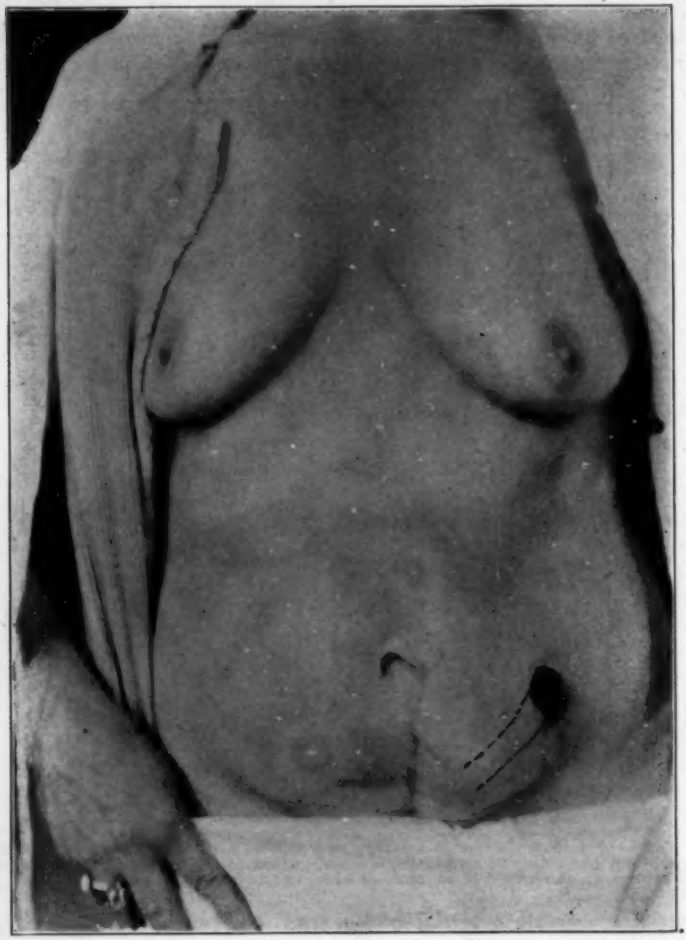

Fig. 6.—Abdomen of a patient one year after combined operation. Dotted lines indicate course of bowel between muscles and skin.

work on. Operating from above with a preliminary abdominal incision, one may close the peritoneum across the pelvis with the satisfaction of knowing that the sacral portion of the procedure will be completely

extraperitoneal. This is a matter of no small consequence as the diseased bowel in most instances ruptures, flooding the sacral field with fecal infection.

The mortality of the combined route has been high because cases considered inoperable by the sacral route have been included in this class of work, and in many instances the abdominal work instead of being attempted first, designedly has been employed as a secondary makeshift and infection has been carried up into the belly. The mortality also varies with the sex — a low rate in the female and a very high rate in the male. The female pelvis is larger and access to the sacral excavation

Fig. 7.—Rectum containing carcinoma from patient shown in Figure 6.

is easier. The vagina offers a means of rapid freeing of the rectum in the sacral stage of the work. In the male the narrow pelvis and the relation of the prostate, seminal vesicles and urethra to the rectum make the operation more difficult.

The border line between low tumors to be operated on by the sacral route has been indicated by Bruening as follows: Where the tip of the examining finger feels normal tissue above the upper margin of disease, the case is adapted for a perineal or sacral operation; all others are best treated by the combined procedure.

As a summary we would suggest that the combined route offers a nearer approach to the ideal removal of the diseased tissue and that though its mortality has been high in the past, this high mortality is due in part to the cases in which this method has been employed, cases in which it was seen from the start that a sacral operation was insufficient. As an operator repeats a difficult procedure he becomes more experienced and expert, and his mortality rate decreases as the number of his cases increases.

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IMPORTANCE OF EARLY RECOGNITION OF PATHOLOGIC CONDITIONS OF ADENOIDS AND TONSILS AND TREATMENT OF SAME *

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Pathologic conditions of adenoids and tonsils are probably responsible for more major and minor ailments in infancy and childhood than any other pathologic condition known, and if not removed may be the source of serious after-trouble. The importance therefore of an early recognition of a diseased condition of these organs is apparent from the following:

Thirty-three per cent. of all children are afflicted with adenoids and diseased tonsils of more or less severity.

Ninety per cent. of cases occur between the first and fifteenth year of age, but substantially all develop in infancy or in early childhood.

There are many cases of congenital hyperplasia, and a surprisingly large number of infants 6, 8 and 10 months of age who have sufficient adenoid hypertrophy to require operative interference during the first year of life. This class of patients always come first under the care of the general practitioner or pediatrist and for this reason I want to emphasize the importance of an early diagnosis and proper treatment, for it is the failure of early recognition on the part of the physician that is usually responsible for the serious results caused by prolonged neglect of hypertrophied lymphoid growths.

The hearing is impaired in a very large percentage of cases. Kyle says 90 per cent.; Woakes says 95 per cent. have aural complications. Dench claims adenoids are responsible for more than half the pathologic conditions met with in the middle ear, and that they are the principal cause of deafmutism.

Other more or less lasting complications that may result are: defective speech, listlessness, frequent attacks of amygdalitis, suppuration of the middle ear, anemia, headache and attacks of indisposition and nervousness. In marked cases there is frequently some deformity of the thorax, as narrow chest, chicken breast, etc. Frequently there is high arched

* Read at a joint meeting of the Chicago Medical Society and North Shore Branch, Nov. 29, 1911.

palate and an abnormal nasal septum. Delavan says some of the worst septal deformities we encounter are brought on by this trouble.

Function: Normal adenoids and tonsils possess a distinct function which consists of a certain irrigation of the tonsil surface by a lymph stream loaded with lymphocytes, this being Nature's defense against the entrance of bacteria into the system. These organs too help direct the action of neighboring muscles and assist in modifying the resonance of the aural cavity.

By reason of their exposed situation they frequently become diseased, and when hypertrophied become prejudicial to phonation; impair the normal resonance of the aural cavity; interfere with the action of important vocal organs; set up a catarrhal condition of the oropharynx, resulting in hypertrophy of the faucial pillars, plica and capsule and in numerous inflammatory adhesions binding all these parts together in one conglomerate mass.

When diseased these organs are prejudicial to health, the open crypts forming a suitable nidus for the development of bacteria. It is known that nearly every variety of infection may pass through the tonsils and other portions of the pharyngeal lymphatic ring to the nearest glands causing them to enlarge; the open lymphatic net-work gives free access to the absorption into the system of bacteria and their toxins, serving in this way as portals of entry for various pathogenic microorganisms.

Therefore tonsils of any size that are subject to repeated attacks of inflammation and contain occluded or dilated crypts filled with decomposing highly septic masses of epithelial or leukocytic débris and bacteria, are a menace not only locally but systemically. The latter phase of this subject is one of great importance and concerns not only the throat specialist, but the internist.

As illustrations of general systemic infections following closely an attack of tonsillitis, we have many instances where the evidence is conclusive that the micrococcus that causes acute rheumatism with its complications and sequelæ, as endocarditis, pericarditis, myocarditis, streptococcic peritonitis, streptococcic pleurisy, pneumonia, lymphadenitis, myositis, hepatitis, pancreatitis, iritis, scleritis, phlyctenular keratitis, gastro-enteritis and very commonly parenchymatous nephritis gain access to the interior of the body through this channel. I have not seen a case of endocarditis in the last ten years which could not be traced directly to an infection through the pharyngeal lymphatic ring.

Enlarged glands of the neck are invariably caused by infections from the mouth and pharynx, absorption entering by way of the lymphatic ring. The faucial tonsils, the largest of the lymphoid bodies in this region, are the main portals of infection. The surgeon who fails to recognize the importance of this atrium of infection when dealing with the subject of enlarged glands of the neck is derelict in his duty to his patient.

Since 1895 there has been a persistent attempt made to prove by laboratory investigation the relationship between tuberculosis and disease

of this glandular structure, some authors going so far as to attribute all forms of cervical adenitis to tuberculosis.

There are many instances of enlargement of the cervical glands of the neck of a non-tubercular nature and which are purely of toxic origin. In a large number of children presenting various degrees of adenoid and tonsillar changes, enlarged cervical glands are almost invariably found. Tuberculin tests show many of them to be tubercular in character, still a large percentage give a negative reaction, thus demonstrating their non-tubercular nature in many cases.

In children the question of latent tuberculosis is of special importance. The frequency with which adenoids and hypertrophied tonsils are found in early life would incline one to a belief in the occurrence of this form of tuberculosis in children to the extent believed by some, but the infrequency with which definite clinical manifestations of this affection is found at this time of life is an argument against this belief.

An interesting feature in connection with glandular enlargement or general systemic involvement from tuberculosis or other infections which may have their initial lesion in the tonsil and are carried into the system through this channel, is that it is not essential for it to be attended with a primary lesion at the seat of infection; indeed, the passage of tubercle bacilli through the tonsils is as a rule not followed by a change in these organs. Strassman, Koeckman, Friedman and others may be quoted in this particular.

Having just studied the evil consequences that follow in the wake of pathologic conditions of these organs in infancy and childhood, attention is now directed to etiology, symptomatology and signs in order that we may the more early recognize their diseased condition.

The post-nasal pharynx at birth is a space only one-fourth inch high by one-third inch wide. By the end of the first year this space is increased to nearly double this size. A slight hypertrophy at this period will cause obstruction; indeed, a small amount of adenoid tissue in a small nasopharynx is more formidable than a greater amount in a good-sized nasopharynx; thus the dangers to infants and young children.

Etiology. There is present normally a certain amount of lymphatic tissue in the vault of the pharynx, fauces, base of the tongue, on the floor of the nose and in the mouth of the Eustachian tubes. Histologically in many instances of adenoid and tonsil hypertrophy the growth differs in no wise from the normal lymphatic tissues, and aside from the symptoms produced by overgrowth it is impossible to say where one ends and the other begins. In other words the normal lymphatic tissue in these positions has no constant size, but varies decidedly in different individuals, resembling in this particular its analogue, Peyer's patches in the intestines. That the growths are then a hyperplasia and not a neoplasm, must be borne constantly in mind.

No doubt many constitutional factors must be considered with favor as predisposing causes of hypertrophy of this lymphatic tissue.

Heredity not infrequently is a contributing factor as evidenced by the statements of various observers who have reported the presence of adenoids

in infants at birth, and the additional fact that many members of the same family are often similarly affected; the latter condition being frequently met with. The former, however, is rare and seems to play only a limited rôle.

Tuberculosis, the frequency of the presence of tubercle bacilli in the growth, varies according to individual observers, being estimated by different authors at from 3 to 30 per cent., the former figure being probably the nearer correct. In cases of pulmonary tuberculosis, tubercle bacilli are rarely found in the growth. The evidence is certainly not conclusive that tuberculosis is an etiologic factor of importance and should be considered as acting only indirectly, that is by lowering the vitality the same as poor hygiene, poor diet, etc.

Syphilis is not a common predisposing cause except indirectly by lowering the vitality and resisting power of the individual the same as does tuberculosis.

Race. The Hebrew race is especially predisposed to this hyperplasia; on the contrary, the negro is singularly free. This latter fact has been explained as being due to their flat, open nares and the character of the palatine arch. Blond children are particularly prone to glandular enlargements and lymphatic hyperplasia.

Scrofula or struma was for many years the favorite and most plausible theory given as a causative factor of first importance, presumably because certain symptoms were recognized as peculiar to both, and the immediate deduction was drawn of a cause and effect. However, we find that in the majority of cases the symptoms of scrofula rapidly disappear on the removal of the diseased adenoids and tonsils, showing the process to be one of intoxication resulting from absorption from the diseased lymphoid tissue, due to insufficiency or failure of a particular secretion of the glands.

Inflammation is at present generally conceded to be the chief causative factor; catching cold, whatever that is, is characterized by acute, inflammatory swelling of the lymphatic tissue of the throat, and repeated attacks lead without question to chronic enlargement. Infectious diseases must be regarded as common inflammatory cause. No doubt the hyperplasia was present before the onset of the disease, but the severe inflammation produced at the time acts as a pronounced excitant and promotes further growth.

Diathesis. It is true in many instances that some diathetic condition seems to be at the bottom of a large number of cases; quoting Bosworth, there is what is called a lymphatic habit, or quoting Potain, "a lymphatismus," which means a particular susceptibility in children for lymphatic tissue to take on inflammation and so increase in size.

In view of all that has been said, it is certain that in different families the resisting power to excessive lymphatic developments is less strong through certain embryonic influences in the child affected than in others, just as in a family one child will be weak while the others are all strong.

Ventilation. Irritating dust, gases, unsuitable clothing, unwholesome food and faulty feeding are common agents for harm. Poor ventilation

is one of the chief etiologic factors. Inadequate ventilation of houses, flats and living rooms is a menace to health. Many people in a room, each rebreathing air that has been previously exhaled, is a menace to health. Every person requires 18 cubic feet of air an hour and in flats it is frequently impossible to get the required amount, the architecture being such that air does not circulate properly. They are not so well ventilated as houses, and are apt to be too hot or too cold. In New York the living is entirely in flats, and it is from this city that we are getting the greatest collection of statistics showing the necessity of having to remove adenoids during the first year of life.

Symptoms in infancy are not those of adenoids in childhood. Enlargement of the gland often produces symptoms during the first days of life, the mother or physician stating that the child has had snuffles since birth. Cases of this sort are frequently diagnosed as syphilis, but the other characteristics of syphilis are lacking. I have seen several such instances in my practice, and in at least one of my cases, a child aged 6 weeks, I had to remove adenoids so as to enable it to take nourishment from the breast. In this case the trouble was diagnosed as syphilis by a fellow practitioner, and when the possibility of adenoid was suggested he scoffed at the idea and stated that enlargement of adenoid tissue was never met with under 3 years and that he was so taught at a standard medical college, a statement I knew to be true. Very recently I learned of a similar case in the practice of one of my close friends where an operation gave immediate relief.

Snuffles when present are particularly evident when the child is nursing, but may occur during sleep if the child's mouth is kept closed. If the mouth is open when asleep, snoring replaces the snuffles. It should be remembered that both snuffles and catarrh are more often due to adenoid hypertrophy than to syphilis; on the other hand, neither snuffles nor catarrh invariably accompanies even a decided overgrowth of adenoid.

Snuffles result from an adenoid which produces irritation, and if it becomes large enough to obstruct the post-nasal pharynx, we have the further symptom of mouth-breathing.

Mouth-breathing, like snuffles, may be due to other causes than adenoid hypertrophy; however, in children the main causes of nasal obstruction are adenoid and tonsil hyperplasia, and during the first year of life the obstruction is due almost entirely to the adenoid alone. In most of the reported cases of hereditary hyperplasia, the nasal cavities have been totally free, the symptoms of obstruction being due solely to the adenoid.

An early indication of this condition during the first year is the presence of repeated colds as evidenced by nasal discharge, pharyngitis, etc. A characteristic sign, when present, is an irritating cough, or a peculiar crowing sound especially pronounced at night; it is apt to be persistent in character, but may be paroxysmal and may resemble closely the paroxysm of whooping-cough. Examination fails to reveal any physical signs in the pharynx or bronchi to account for the peculiar cough.

Another symptom is otitis media. It is not generally recognized how frequently it is due to adenoids. A child may have repeated attacks and

still the adenoid may be very small, so small, in fact, that unless a very careful examination is made it will be overlooked.

Another symptom occasionally found in early infancy is colic, due no doubt to the fact that in its efforts to nurse, the child swallows large quantities of air. One only, or all of these symptoms may be present.

The soft consistency of the adenoid, its location and its glandular structure predispose it to constant irritation. The result is that even where hypertrophy does not take place, congestion and infiltration of the glandular tissue will allow it to increase in size to such an extent that there are intermittent periods of complete and partial nasal obstruction. A large adenoid growth need not obstruct all the time but is sure to obstruct some of the time.

In children aged 2 years and upward, the symptoms are more or less constant cold in the head, catarrh, and a seromucous or mucopurulent discharge from the nose. Acute rhinitis is rare in children and what is apparently a cold in the head is usually an aggravation of a subacute inflammation of the pharynx and tonsils. Usually they have a hacking cough, frequent severe colds, more or less continuous catarrh and sore throat. In long-standing cases the symptoms are nasal obstruction, mouth-breathing, frequent epistaxis, asthma, night sweats, headache, nasal voice, repeated attacks of catarrhal otitis media, purulent otitis, earache and impaired hearing, malnutrition, anemia, narrow, sunken chest, with a history of snoring, nightmare, restless nights, etc. Great susceptibility to measles, scarlet fever, diphtheria, pneumonia, hay fever, frequent enlargement of the cervical lymphatic glands, various reflex symptoms, as cough, laryngismus stridulus, incontinence of urine and a great variety of minor troubles. With change in the weather and similar causes all symptoms become exaggerated, due of course to an increase or decrease of the distention of blood-vessels in the tissues concerned.

In marked cases the diagnosis can often be made from the facial appearance. The clinical picture presented is characteristic and striking. The childish face devoid of expression, stunted growth, impaired mentality with dulness and stupidity, open mouth, drooping eye-lids, vacant, dull or stupid expression, contracted alæ, narrow, sunken chest, pigeon breast, making it impossible to mistake the diagnosis. But in patients seen early the diagnosis is not easy, and to depend on the classic train of symptoms just given would be to let many cases pass undiagnosed until the general health, hearing and development might be everlastingly impaired.

In children and infants who have not the characteristic appearance just enumerated, adenoids should be suspected when a history of obstructed breathing through the nose, snoring, catarrhal symptoms, frequent colds, otitis, earache, inability to nurse and laryngismus are present.

In most cases there is impaired hearing. Kyle puts the figures at 90, and Woakes at 95 per cent. All authors admit that a high percentage of these patients have deafness more or less pronounced. Frequently the deafness is discovered by accident, the patients presenting none of the symptoms of adenoids for the reason that nasal breathing is substantially

only interfered with when the adenoid hangs down over the margin of the choanæ. A small growth over the upper part of the septum, not large enough to cause obstruction to respiration, seldom gives rise to any symptoms aside from a constant secretion of mucus.

The various pathologic conditions about the Eustachian tube up to the present time have not received the serious consideration their presence demands, owing principally to failure of early recognition on the part of practitioners and pediatrists. We must impress on these gentlemen the fact that the commonest cause of serious changes in the Eustachian tubes is obstruction caused by lymphoid hypertrophy in the fossa of Rosenmüller, on the Eustachian eminence, or in the mouth of the tube, and that obstruction hereabouts is extremely rare without disease of the surrounding lymphoid tissue.

Frequently where the pharyngeal vault is perfectly clear, a small adenoid mass situated in close proximity to the tube may cause obstruction and interfere with ventilation of the tympanum and cause catarrhal changes in the tube itself, resulting in middle ear catarrh with tinnitus or suppuration and subsequent deafness.

The faucial tonsil, too, especially when the velar lobe is greatly enlarged, by pressing on the Eustachian tube from below, interferes directly with free ventilation of the middle ear, and in other instances where the Eustachian orifice is located quite low down and directly back of the posterior faucial pillars, it is subject to pressure from even moderately enlarged tonsils. A good rule to remember is, whenever you find faucial tonsils in a state of inflammation or hypertrophy you will positively find a pharyngeal tonsil in like condition, and whether this pharyngeal hypertrophy be much or little, it is more important that it be removed than the faucial tonsils.

Inspection reveals the faucial tonsil nearly always enlarged. There is also seen a mucous or mucopurulent discharge running down on the posterior pharyngeal wall just back of the uvula and soft palate. If the child is held before a strong light, the tongue depressed and the uvula lifted with a palate retractor, occasionally a very good view of the pharynx is obtained. Again, with the pharyngoscope the adenoid can frequently be plainly seen and studied *in situ*.

In small children where adenoids are suspected but where inspection fails to reveal their presence, and where for some reason the pharyngoscope or laryngeal mirror cannot be satisfactorily used, the suspicion is confirmed when by digital palpation of the vault of the pharynx there is felt a soft mass which bleeds easily, usually leaving a blood stain on the finger, no matter how much gentleness has been exercised. The rough surface of the adenoid is quickly detected by one accustomed to making this examination.

In order to make the examination, have the child held with its head against the left shoulder of the nurse, the right arm of the nurse holding the child's hands, and the left hand holding the forehead. The left thumb of the examiner is pressed against the right cheek of the child, pushing the buccal mucous membrane between the teeth, the ends of the

fingers of the left hand grasping the right side of the lower jaw, a firm grip is obtained which makes it impossible for a child with teeth to bite the finger of the examiner. The right index finger is used for passing through the mouth into the post-nasal space, or if this is too small to admit the index finger, the little finger may be tried.

It is better not to make a digital examination if the diagnosis can be established without, since it is usually more or less painful and frightens the child, but if it must be done it should be done quickly, as rapid manipulation avoids resistance and disturbance. The above suggestions do well in examining children over 2 years of age, but the presence of an adenoid in small children and infants is not so readily determined on account of the small space in the post-nasal pharynx, which is so small in most instances as not to permit the finger to be introduced. The diagnosis in this class of patients must be made from symptoms alone.

In adults and older children where the growth fails to disappear at maturity, the character changes from that of childhood. Inspection shows the usually highly arched palate with the "adenoid fringe" or its remnants and the fauces and pharynx covered with a slimy, sticky mucus. There is enlargement of the lingual papillæ and nodules on the posterior wall, "granular pharyngitis." The tonsils are usually sclerotic, the examining finger reveals the growth to be of a more fibrous nature than in children; the real size is deceptive and there is always more of the tissue than would appear from examination.

Prognosis. Conditions tend to right themselves at puberty; however, it is not uncommon for this lymphoid tissue to remain abnormally large after this period, thus serving as a permanent cause of nasopharyngeal catarrh. As a rule, the prognosis is good unless much damage has been done to special organs or special senses or in the general health or development of the child. If such damage has been done, the prognosis will depend largely on its kind and extent. In cases demanding radical treatment, once the offending mass is removed, ear changes and other conditions retrogress, and frequently normal or nearly normal condition results.

Parents should not be informed that following the operation the child will be entirely relieved of the symptoms such as head and ear trouble, etc. Parents should be warned that it is always possible for a child to have an acute infection of the nasopharynx without any demonstrable amount of tonsillar tissue.

The changes in the voice which is feared by the lay people and vaguely by some authors rarely, if ever, occurs. Singers whose training and quality of tone has been produced with hypertrophied tonsils, should be warned of the possibility of some change in the quality of tone due to unaccustomed action of the palate muscles. Usually the quality of the tone is much improved.

Treatment. An acute adenitis due to cold which was not preceded by anedoid symptoms may occasionally disappear on hygienic treatment. In cases of some duration there is no value in sprays, applications or internal treatment. In chronic cases operation is the only treatment that is of avail, providing it is not done too late. These operations should always

be done early and not subject the little patients to the grave results which are sure to follow the long continued presence of these growths.

When to operate: Do not operate where tonsils are simply somewhat enlarged, if normal in other respects, and which are producing no symptoms.

Do not operate in every case of adenoids, but only in cases where there is evidence of obstruction or some definite interference with health. Do not operate in every case of simple swelling of the pharyngeal tonsil or in simple otitis, for the symptoms are frequently only temporary and will disappear without operation. Unless the indications are very definite do not operate during the first year.

Operate when the tonsils by their size nearly fill the cavity of the pharynx, and as a result there is impairment of voice; whenever the lymphoid tissue is hypertrophied to such an extent that harm has, or probably will result in impairment to the general health; when there will result permanent impairment of any of the organs of special sense, in repeated attacks of otitis media, in cases of phlyctenular keratitis, iritis, scleritis when other methods fail and where the patient suffers from recurrent attacks of tonsillitis or adenitis.

Operate in cases of repeated attacks of peritonsillar abscess; in repeated attacks of tonsillitis when the attacks follow closely in succession; when chronic inflammation is a source of constant irritation; in reflex cough; when inflammation of the gland is repeatedly followed by cervical adenitis; where there is general systemic infection; when by hypertrophy and swelling there is obstructed breathing; when there is closure of the Eustachian tubes with attending ear pain, middle ear inflammation, deafness, etc.

Operate when there is general anemia; swelling and suppuration of the cervical glands; in cases of articular rheumatism and complicating endocarditis, where the tonsils are probably an etiologic factor; in tuberculosis; in chronic bronchitis in children; when a patient suffers from recurring adenitis or tonsillitis; in parenchymatous nephritis; hepatitis; pancreatitis, gastro-intestinal disturbances which are aggravated by acute attacks of the chronically inflamed tonsils.

Operate always to remove foci of infection and to restore the functional efficiency of the respiratory, phonatory and articulatory organs.

Operate in all cases of underweight in children in which organic disease can be excluded and in which there is evidence of diseased adenoid tonsils. Operate in all cases where there is a persistent temperature of from 100 to 101 F., apparently due to the presence of disease of these organs. Operate as early in life as there is positive evidence that the adenoid hypertrophy causes persistent symptoms.

Operation. Diseased conditions of these organs should be recognized as soon as they produce permanent symptoms and should be operated on thereafter as quickly as possible so as to avoid marked systemic effect. If a permanent result is to be expected, the operation should be as complete as it is possible to do it. Masses of lymphoid tissue should not be

left hidden either in the nasopharynx or between the pillars of the fauces. In other words, the operation of choice is tonsillectomy and adenectomy.

Anesthetic. An anesthetic and at least one competent assistant are essential, excepting in certain cases. In small infants the question of anesthesia is more or less a question of the desire of the parents. If left to me I do not advocate it in operating on infants; in this way you avoid the danger of the anesthetic.

In the choice of an anesthetic there is but one thing to be considered: safety. Chloroform I consider extremely dangerous in all throat and nose operations. Ether is the only general anesthetic advisable, being free from danger, effective and in the hands of a skilled anesthetist only a little more troublesome than chloroform. Statistics gathered by Packard conclusively show that ether is the safer of the two drugs. He found twenty-nine deaths recorded as a result of the anesthetic being given for tonsil operations of all kinds, of which twenty-six resulted from chloroform, two from ethyl chlorid, one from A. C. E. mixture and none from ether. (Ether is contra-indicated in tuberculosis, abscess or other diseases of the lungs.)

The table on which the operation is to be performed will vary in height according to the stature of the operator; one 4 feet in height makes it convenient for the operator to sit at ease during the operation. In order to bring the pharynx into a plane lower than that of the larynx the head of the table should be lowered so as to have it about 10 inches lower than the foot end. This inclination is such that the blood can be sponged out before it is swallowed or sucked into the trachea.

The desiderata for complete obliteration of diseased tonsils are: (1) an effective illumination of the field of operation; (2) a degree of separation of the tonsil from the surrounding tissues that will render the gland pendant.

Illumination is best obtained by a head lamp (preferably Kirstein) of some description where electricity can be used. Most of the lamps used by general surgeons are unsatisfactory as they leave the operative field in shadow. If for any reason the special lamp cannot be used sufficient light may be reflected from a large electric bulb held by an assistant on the opposite side of the table. In order to meet any contingencies such as the burning out of the more complicated illuminating contrivances, a large electric bulb with sufficient cord should be carried by the operator. These lights require no current controller, can be attached to an ordinary light socket and furnish sufficient light for emergency purposes.

Where both tonsils and adenoids require removal and where a general anesthetic is to be employed, the patient is placed lying on his side with the arm underneath drawn out behind his back, the body turned somewhat toward the operator so that he rests partly on his chest, his head lying on his cheek at the very edge of the table, his body being held strongly backward by an assistant. In this position the blood runs out of the mouth and does not enter the air passages. The operator takes his position at the side, the anesthetist at the head of the table. In this position the operator with a depressor controls the tongue, regulates the breathing

and requires the assistant to handle the anesthetic and the gag through the entire proceeding, and the forceps only during the last stage of the operation.

The gag, the blades being covered by rubber as a protection to the teeth, should be inserted on the side of the tonsil to be removed, and held well between the back molars. For the excision of the right tonsil the patient lies on the left side and conversely, the uppermost tonsil being the one cut out, so that the blood will flow downward out of the way of a view of the operative field.

Technic is largely a matter of choice. Some men develop a certain technic along one line and some another. Of the various methods advocated or brought forward in the last five years the operator should select that one which combines simplicity of technic with completeness and a minimum of traumatism. The dangers of tonsillectomy, hemorrhage, shock, traumatism and death from anesthesia, diminish greatly with carefully selected equipment and technic. The operation is a delicate procedure requiring an abundance of time and attention to the details of technic and should not be lightly undertaken by everybody.

Since the complete enucleation has been advocated, a great number of general practitioners and specialists have attempted to change their methods, and in learning the new operation the pillars have been damaged, the patients frequently being worse off than before operation. If surgeons, ophthalmologists and general practitioners must remove tonsils, they are advised to do a tonsillotomy until they may receive instructions in the details of complete enucleation.

Indeed, it is not always essential that a complete enucleation should be made. Crockett is correct when he states that in ordinary cases of simple hypertrophy it is unnecessary to remove the base of the tonsils, for a perfect result may be frequently obtained by removing enough of the tonsil to bring it down to normal size, so as not to project beyond the pillars. This may be done either with a snare, tonsillotome or punch. In simple hypertrophy the operation of safety is always tonsillotomy, until such time as the physician becomes familiar with proper technic required for enucleation.

Enucleation. When done under local anesthesia, either sharp or dull dissection may be used because of the more perfect control of the field of operation. Where a general anesthetic is to be given it should be done by blunt rather than sharp dissection, excepting perhaps in the hands of a few operators who have obtained special accuracy in dissection with sharp instruments.

Separation and removal should constitute two distinct steps. Illuminating the oral cavity with light from the head mirror, the separation can readily be done by incising the tissues with a Freer knife between the anterior wall of the tonsil and the pillar just below the inferior border of the velar lobe. A blunt dissector is then passed through this incision and swept up and down, thus separating the tonsil from the anterior pillar. The dissector is then passed over the top of the tonsil, at which point the operator should be careful to remember that the upper level of

the tonsil is considerably above that of the velum palati. The dissector is then carried downward between the tonsil and posterior pillar; no traction is made on the tonsil during this dissection.

The next and most important step in the operation is the dissection of the velar lobe out of its bed in the soft palate. Important, because experience has taught us that subsequent successful results of all tonsillectomies is in direct ratio to the more or less complete removal of the velar lobe. Thorough enucleation of the velar lobe is best accomplished by pulling the tonsil strongly inward and downward with a Volsellum forceps until the velar lobe becomes visible, when it can be severed with a sickle-shaped knife (Tydings) from its attachment to the palate. Frequently a satisfactory enucleation of the velar lobe can be done by inserting the finger in the incision made when dissecting the plica triangularis from the anterior pillar, passing the finger upward and releasing the velar lobe from its bed.

With a good Volsellum forceps take a deep hold of top and bottom of tonsil, then draw well forward free of the pillars. A tonsil snare previously threaded with a No. 5 or 6 steel wire is now slipped over the gland and the snare drawn home gradually through the small attached portion, the gland usually coming out in its entirety with scarcely any traumatism, the tension outward being continued during the entire process. The deeper blood-vessels have been avoided by the elevation of the tonsils.

Enucleation with the finger should be done when possible. I have done it several times by simply continuing the separation stage of the operation when the tonsil is found tough and fibrous. While impractical in a large majority of cases, it should, however, be attempted when the tonsils are sufficiently firm for its accomplishment; the attempt should at once cease if the pendant gland crushes under pressure instead of rolling and turning about under the finger.

After removal, a good sized gauze sponge on a curved hemostat is inserted into the space between the pillars and pressure made while the anesthetic is again administered preparatory to removal of the other tonsil. In rare cases, where hemorrhage persists beyond four or five minutes, the tampon can be removed and a smaller one dampened and dipped in powdered desiccated alum and held firmly in the tonsil bed. Patients should always be kept under the anesthetic until hemorrhage stops.

Before the patients leave the table, examine carefully to see that no portion of a lobe of the tonsils has escaped dissection, and if so, seize the portion with a punch forceps and remove the fragment piecemeal.

When dissecting the gland the operator alone can sponge efficiently, and he should do so as often as the blood covers the field of work. If done quickly the patient need swallow no blood nor be embarrassed in his breathing. Except when holding a tampon on the bleeding gland, although the operator has pressure on the gland, the etherizing can proceed, for the work can be done by easy stages and with light anesthesia.

If adenoids are present let them be removed after bleeding from the tonsil stops. In infants and young children, if only adenoids are to be

removed, the operation can be done without an anesthetic and with very little shock to the child; in fact, it can be done practically as painlessly as making the ordinary examination.

For the purpose of operation an assistant is necessary to hold the child, while a nurse should be present to assist. The child should be wrapped tightly in a sheet which binds the arms to the sides and should be held upright by the assistant with the back of the head of the child against the assistant's left shoulder, one of his arms pressing against the arms of the child, the other hand pressing its forehead back against the shoulder.

A gag is now introduced and is held by the nurse while the operator holds down the tongue. He then passes a Gottstein, La Force or Schutz curette to the posterior nares, bringing the blade of the instrument as far up and as far forward as possible, then first by a backward, followed by a downward movement. In most instances the entire adenoid can be removed with one stroke of the blade. The fossa of Rosenmüller should be explored by the finger and a small Vogel's adenoid curette to be sure that no lymphoid tissue is left in this situation. The one essential thing in young children is to avoid getting an infection of the Eustachian tubes; therefore, operations should be done under the strictest aseptic precautions. The child is then put to bed without a pillow, lying on the side with the face downward, and the nurse is supplied with a spray containing 1 to 5,000 adrenalin, to be used in case of hemorrhage, in which case the child should be placed with face upward and the adrenalin sprayed through the nose.

On the day following the operation the majority of patients have from 1 to 2 degrees' elevation of temperature. With few exceptions they complain for three or four days of painful deglutition and some pain in phonation. It takes from eight to ten days for the fibrinous deposit covering the wound to clear off.

As to the results of this operation, a slight increase in the snuffles may be present for a few days.

Rarely is any after-treatment required for the first two days, then a mild antiseptic spray of saturated solution of boric acid with 5 per cent. alcohol to prevent infection of raw surfaces. If there is much bleeding the mouth can be kept clean and bleeding stopped by spraying the mouth and nose with a 5 or 10 per cent. solution of argyrol or protargol.

Accidents and complication during and following operation. Probably the greatest source of anxiety during the operation is found in the bleeding. In most cases hemorrhage is controlled easily; in some instances the flow of blood is checked with difficulty. Usually pressure with gauze or the application of the tonsil clamp will control hemorrhage, or in the absence of the latter gauze dipped in persulphate of iron powder and applied directly over the bleeding point by means of a curved hemostat, will stop ordinary bleeding in from five to ten minutes. Failing in this, find the bleeding point by retracting the anterior pillar and grasp it with a hemostat, the pressure of which will stop bleeding unless a large vessel

has been divided. In the latter case the vessel should be ligated with catgut suture.

Secondary hemorrhage is occasionally met with, and like primary hemorrhage can usually be controlled by pressure. Failing in this, we must resort to more radical measures. First, we should try to suture the pillars over a rôle of gauze. This can be done by a small curved needle, suturing the pillars from behind forward. When all the above means fail the common carotid artery must be ligated.

Sepsis has been met with in a few cases and emphasizes the importance of thorough asepsis both before and after operation.

Ether pneumonia, acute mastoiditis, acute meningitis are complications occasionally met with and emphasize the importance of thorough equipment and technic.

Recurrences have a medicolegal aspect which is of vital importance at the present time. That infants and children operated on early even when the operation has been thoroughly done have recurrences is authenticated by the statements of numerous authors, as, for instance, Cohen, Jacobi, Freeman, Ludlum, Harris, Potain, Luellum, Delavan, Jaresky, Glogau, Hopkins, Gorke and others.

Freeman sizes up the situation as follows: "Recurrences are due largely to the predisposition on the part of the child to produce adenoid tissue and not to defective operation."

Felix Cohen: "While thorough removal is occasionally followed by recurrence, it is only in from 3 to 7 per cent. of cases."

Jacobi: "Recurrences are not always due to imperfect operation, but to careless after-treatment."

Ludlum: "Babies operated on early, even when the operation is thoroughly done, sometimes have recurrences. This, I think, is the reason for the indisposition on the part of specialists to operate up to 2 years of age."

Harris: "The protective function of the tonsil carries with it the inherent qualities of the tonsil to enlarge on the slightest irritation for the affording of further power of defense. This inherent tendency of the tonsil to enlarge is further seen in the frequent recurrences of the tonsil after removal. Up to the time of Hopkins' paper it was generally held that such recurrences do not take place; we now know that it is by no means uncommon."

Gorke discusses this subject in an exhaustive manner, especially from a histologic standpoint. After stating the two commonly held explanations for the recurrence, viz., malignancy and imperfect operation, and giving convincing proof that neither of these reasons can be the cause in the majority of cases, he shows that the structure of the growth resembles in the main that of ordinary pharyngeal hyperplasia, but differs in this particular, "that a sharp line of division of the different layers is not possible."

Personally I have seen secondary hypertrophy of tonsils and adenoids following operations done by several of our leading laryngologists. In some

instances I witnessed the primary operation to know that it was thoroughly done. During the last year I have seen two patients where secondary hypertrophy occurred and where the operation was done by a physician of note, who on every occasion proclaims in public that he had never seen a recurrence in a case where he had done the original operation.

As a result of experience along the lines indicated, I have arrived at the following conclusions: First, that no matter how skilful the operator, it is impossible by any method known at the present time to remove every particle of lymphoid tissue in either the pharynx or fauces.

Second, that the remaining particle of glandular tissues, be it even microscopically small, is capable under certain conditions of assuming a degree of hypertrophy equal to the original growth.

Third, that under favorable conditions in a certain percentage of operated cases a secondary hypertrophy of the lymphoid tissue in the pharynx will occur, no matter by whom the operation is done or how thoroughly he may think he has removed all glandular tissue.

Fourth, the reason perhaps we do not see more recurrences among our own cases is because when the obstruction recurs patients are likely to seek another physician; also that patients are more or less constantly changing physicians, and that when we do see secondary hypertrophy in the other fellow's patients we are inclined to believe that the primary operation was not complete. We should also remember that the other fellow is thinking the same of our cases.

In this connection I will report a case which illustrates beautifully the whole situation as I view it:

A boy, aged 4 years; complete tonsillectomy and adenectomy, June, 1909; operation done by a laryngologist whose skill, ability and reputation are second to none; examinations following the operation and six months later reveal no glandular tissue; child remained free from all symptoms for a year, at which time hemming to clear the throat was noticed; examination revealed a small piece of glandular tissue half the size of a pea located about the middle of the posterior pillar of the left tonsil. The throat symptoms continued to increase in severity and the glandular tissue to grow until at the end of another year it assumed a size as large as the original tonsil, filling the space between the pillars completely; so far as inspection and external appearances went it was a complete reformation of the tonsil. At the second operation no other glandular tissue was perceptible in the throat; four months later a bud of glandular tissue appeared beneath the margin of the palate in the space occupied by the velar lobe on the right side. During a recent attack of diphtheria this glandular tissue assumed considerable proportion; at this time also a smaller mass appeared in a similar location on the left side. Since the subsidence of the inflammation due to diphtheria the glandular tissue on the right side remains about the size of a cherry and that on the left about half as large as the right. Therefore, glandular hypertrophy began in the faucial tonsil one year after the original operation and in the velar lobe of both tonsils not until over two years after the primary operation.

15 East Washington Street.

DISCUSSION

Dr. O. T. Freer: The obstruction to breathing caused by enlarged tonsils frequently makes general anesthesia a cause of anxiety, for such tonsils, protruding both backward and inward, leave little space in the throat as soon as the relaxa-

tion of the muscles in narcosis causes the tongue to drop back, so that under these conditions respiration may become alarmingly impeded, especially if the usual presence of an adenoid growth adds to the respiratory obstruction. In some cases, breathing, heretofore sufficient, becomes blocked as soon as a partly detached one of two large tonsils has to be drawn inward against the other prior to severing it at its base, especially if a clot or mucus fills the throat. Under such conditions of inspiratory obstruction it may be necessary to keep the tongue drawn out with tongue forceps and to repeatedly cease operating in order to wipe out the throat and give the patient air.

In addition to chloroform, I have found the popular combination of nitrous oxid followed by ether especially apt to lead to poor breathing during the operation and experience has therefore taught me to rely on ether alone to avoid a profound narcosis, and to always use the Ingals position of the patient lying upon his chest, with one arm behind him and his face looking slightly downward, so that blood and secretions may run out of his mouth.

I always remove the tonsils by knife dissection as described by me in the *Jour. A. M. A.*, 1909, lii, 547-550, in an illustrated article to which I refer those interested in the matter. It is sufficient to say here that this procedure never fails to remove all of any tonsil, whether large, small or cicatricially imbedded and that it cleanly takes away the important velar lobe of Casselberry. This method of operating arose from my dissatisfaction with the crude and unsurgical procedure of blunt dissection followed by the snare or punch. The injury inflicted by this method is great while the tough tissues in question cannot possibly be accurately divided by tearing implements, so that the anatomical divisions of the tissues are not followed. Among the mutilations due to blunt dissection and so-called "finger enucleation" are tearing of the faucial pillars to shreds, cutting off of a large portion of the soft palate with the snare, including the uvula, and the production of numerous sloughs from the damaged tissues. In one patient, seen by me for a colleague, gangrene of the side of the throat and death of the patient from endocarditis resulted from an operation by blunt dissection and the snare; in another case a fatal abscess of the neck occurred. Septic fever and violent inflammatory reaction are usual results after the tearing methods, which are especially objectionable because the walls of the throat are so peculiarly liable to gangrenous processes after dentalizing injuries.

All of these evil results are avoided by clean knife dissection, whose accuracy leaves the palate and pillars intact and I have had sufficient experience to say that the same accuracy avoids the opening of larger vessels in the pillars and so prevents serious hemorrhage. The danger from bleeding is a slight one compared to the danger from sepsis and as in other parts of the body the attempt to escape it by tearing out such parts as need removal means rough and injurious surgery.

The reason why tonsils should be dissected out is the frequency with which peritonsillar inflammation cicatricially binds the tonsils to the walls of the tonsillar fossa, so that in some cases even a sharp knife blade cuts through the tough tonsillar attachments with difficulty.

As to the removal of adenoids. Recurrences do take place, but most so-called recurrences are due to the imperfect work of the popular curets or adenotomes. While there is sufficient room in the nasopharynx of an adult or older child for the curet, it has not enough play in the minute throats of small children, the incisor teeth of the upper jaw checking the action of the blade downward while those of the lower jaw do not permit it to come far enough forward, so that fringes of tissue are left behind and in the choanæ and on the posterior pharyngeal wall. In addition the action of the blade is superficial and so leaves adenoid tissue in the pharyngeal vault. I have had many operations to do where previous attempts with the curet had left nearly all of the adenoid tissue in the pharynx. In addition the curets and adenotomes, unless held absolutely centrally, are liable to include in the ring-knife the Eustachian prominence if it project greatly, as it often does in children and so are liable to cut off a portion

of the cartilaginous tube, an accident which has more than once led to fatal hemorrhage.

For these reasons I have abandoned the curets long ago and use only the pernasal removal of adenoids with my pernasal forceps as described some years ago in the *Annals of Otology*. The direct action of this forceps through the nose, guided as it is with the finger in the nasopharynx, permits the removal of every part of the adenoid tissue in all situations, so that both the posterior nares and the fossæ of Rosenmueller are thoroughly cleared. I have known of only one recurrence in all my operations, while in the text books as high a percentage as 30 per cent. is admitted as inevitable after the curets.

These frequent recurrences are making many people averse to having the operation done for their children, so that the faulty work of the curet deprives many patients of the benefit of the removal of adenoid vegetations.

The technic of the pernasal removal of adenoids requires some practice and general anesthesia, but he who masters it, may assure his patients that there will be no recurrence, except in the instances so rare that they are of slight moment.

— The following "Fly Specks" are reproduced from the *Bulletin of The Chicago Department of Health:*

Before breakfast —
A swatfest
For the fly pest.
— Start the day right!

* * *

Are you granting license to flies to peddle filth around your house?

* * *

Flies will —
Peddle, peddle, peddle,
Unless you —
Paddle, paddle, paddle,
Get busy!
Keep busy!

* * *

Flies
Follow
Filth

Fever
Follows
Flies

Swatting
Saves
Sickness

If at first you don't succeed, swat, swat again.

* * *

It's a short haul *from* the garbage can *to* the dining room *via the fly route.*

* * *

Bread makes a fine foot-wipe for flies.

ILLINOIS MEDICAL JOURNAL

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SEPTEMBER, 1912

DR. JACOBI'S ADDRESS

Dr. Jacobi, President of the American Medical Association, recently attended the centennial meeting of the Rhode Island State Medical Society and delivered an able address which is of such great interest to all members of medical societies that we have thought it well to reprint in this connection certain portions of what Dr. Jacobi said. Dr. Jacobi is considerably past 80 years of age, but seems to retain his grasp on the present-day medical tendencies in a remarkable manner.

Not the least interesting part of this address is his reference to the family of Hohenzollerns, from whose oppression Dr. Jacobi escaped in 1848, together with Carl Schurz, Pretorius and other university scholars, many of whom settled in Illinois near Belleville, were known as Latin farmers and became valuable citizens.

We commend the reading of this extract from Dr. Jacobi's address to all our members.

THE EDUCATIONAL VALUE OF MEDICAL SOCIETIES AND LIBRARIES

ABRAHAM JACOBI, M.D.
NEW YORK CITY

There are more diseases than you know how to combat, more patent medicines and infant foods than paid doctors can eulogize in alleged original articles and loud editorials. We have five times as many medical

schools as are required to supply us with competent practitioners, twice as many doctors as are wanted by the sick or are capable of making a decent living, or are demanded by the necessities of sanitation; five times as many medical magazines as correspond with the actual digestive or productive possibilities of the profession. . . . .

Hahnemann, one hundred years ago, had just founded and named his homeopathy, one of the last historical sectarian systems established both on the strength of his great learning and his whimsical imagination and really ludicrous postulations, which were still greater. He succeeded, however, unwillingly and unwittingly, in gradually undermining ill-tasting and indigestible poly-pharmacy and introduced a disbelief in drug omnipotence. The practice of our legitimate medicine owes him much. He proved, contrary to his intentions, that diseases may get well spontaneously, and facilitated the efficacy of the teachings of Louis of Paris, the revered master of our Jackson and Bowditch and Holmes, and the temporary predominance of the nihilism of the Vienna school. Hahnemann's influence you know to be still powerful in the preservation of the sectarian name, and in the faithful adherence to it on the part of the summer hotel piazza ladies who do not understand or care for Hahnemann's historical influence, which lasted a century — longer than any other system since the abolition of Galenism — because they are in the habit of thinking less with their brains than with their impressible hearts.

. . . .

An all-important event of 1810 is the foundation of the University of Berlin, one of the proofs of an awakening on the part of a dull and impotent Prussian king, in whose family these two hundred years idiocy, genius and insanity have reigned supreme. . . . .

I never miss the meetings of the state society and attend now and then those of my county. Many times I have conversed with young men, and those no longer quite young, as to their opportunities of learning in a session. I have been told: "I stay at home; I am not interested in the subjects discussed; I do not learn there." The latter is not true; even the occasionally, but rarely, dreary paper affords food for thought or stimulates criticism. I for one, have never been in any medical society without learning. If a paper furnishes little, the discussion yields more. Quite often the discussion is of more value than a paper. That is why the overloading of a program with many or long papers, to the exclusion of discussions, is a grave mistake. What a man tells of his own practice is a gain to me, as it was to him; viz., a new experience or the confirmation of a previous one. If discussions are dreary, it is mostly the fault of the presiding officer, who either is not well informed himself or is deficient in character and unable to stop garrulous and empty talk. I often feel like calling him to order.

What you want in medical society is advanced age and youth together. The latter must be trained into communicating its positive knowledge and its doubts. A man who has knowledge knows how to ask questions. Moreover, the society is the proper place for the young practitioner to train himself for publicity and larger gatherings. The young specialist

is gladly received and should make himself at home in the local and state society. He may be able to teach a special subject, and is welcome as an instructor; but what is more important to him is to learn from the all-round practitioner. For some time, it is true, some young specialists here may have wished to believe, or to make us believe, that they were born and required no making. I have made myself disagreeable before and have been suspected by the misinformed of hating specialism, which is a grievous mistake. The reverse is true. Indeed, I have been called a specialist myself. But when I have a right to expect a doctor like myself, a general practitioner, to reach above a low average, I want a specialist to be a master of his narrow art and at the same time to have a fair knowledge of the science of medicine, so that he may be able to discuss special subjects intelligently and usefully to the practitioner. That is all, but it is a great deal. That sort of a man or woman is welcome in a meeting of our societies, both in city and country. He is welcome to learn, welcome to teach.

The laboratory, or so-called laboratory, has taken the place of diagnosis and indication of treatment and what not; that is why we have so-called experts who diagnosticate and treat like a Christian Scientist by solemn absence. They treat your cases by an examination of a drop of blood, or an ounce of urine, and send you an elegant square piece of paper with their findings, which some of you who are too lazy to make your own examination, blindly accept. That is one of the mistakes made by us, the general practitioners, who once were and again must be the cream of the medical practice, the results of which are the disrespect we are held in by the credulous public that runs after specialists, mature or immature, who treat their local diseases as best or as worst they can and neglect the organism that harbors the local trouble.

VERY SMALL BUSINESS

A number of our members have mailed us copies of a boiler plate reproduction of an article which appeared in the Rockford *Morning Star*, Sunday, Aug. 11, 1912, and purporting to emanate from Dr. A. J. Markley, of Belvidere, the newly elected treasurer of the Illinois State Medical Society. Our correspondents have expressed surprise that these envelopes bore a Rockford post mark. For those of our members who are not acquainted with the geography of the state, we may say that Belvidere is the county seat of Boone County, and this county adjoins Winnebago County, the county seat of which is Rockford, where resides Dr. H. H. Richings, *de facto* member of the State Board of Health, as also Dr. C. E. Crawford, listed as a sanitary inspector of "the medical department of the state government," and Dr. Paul L. Markley, who, we understand, is a brother of the Treasurer. Which of these gentlemen has been burdening the mails with this reproduction we do not know. Just what the gentlemen, responsible for this reproduction, expect to accomplish by

scattering this misrepresentation of facts broadcast over the state we are unable to understand. Even if these statements were true, we do not see how the publication of such stuff in the lay press would benefit our society. The facts of the case are as follows:

The society having elected Dr. Markley to succeed Dr. Brown, the Council, as in duty bound, began at the earliest possible moment to arrange for the proper transfer of the funds of the organization. It was necessary first for Dr. Markley to furnish a proper bond; second, it was necessary to check up Dr. Brown's accounts. This was undertaken by a committee consisting, we believe, of Drs. Black, Marshall and Cooley. These gentlemen reside in different localities and are all busy men, having their private and professional affairs to attend to along with their society duties. About July 11, we had occasion to call on Dr. Brown in Decatur, and saw a copy of the letter he had that day addressed to Dr. Black, sending his check for all funds in his hands. It seems that the Council returned this check and requested that separate checks be made for the medicolegal fund and the general society fund. This caused another slight delay. The accounts were then sent to each of the members of the committee and just as soon as each determined for himself that everything was right the funds were sent to Dr. Markley for deposit in the bank of which, we understand, he is the vice-president. To have proceeded in any other way would have been wrong in the eyes of the law. Having received the money decently and in order we trust the new Treasurer will take early opportunity to apologize for the insinuations, unjust and uncalled for, which he and his friends have seen fit to scatter broadcast concerning an old and valued member of the state society.

THE NEW ST. LOUIS MEDICAL COLLEGES

We call attention to our correspondence columns where will be found a letter signed by Dr. W. U. Kennedy, of St. Louis, Secretary of the St. Louis College of Physicians and Surgeons and Barnes University Medical School. Inasmuch as we have been criticised for some remarks made concerning one of these organizations, we are glad to give space to Dr. Kennedy's letter, which seems to breathe the right spirit. The language of his letter would indicate that conditions have not, in the past, been good. We cannot, however, refrain from wondering at the action of this and one other school in St. Louis, in appointing to lectureships gentlemen from Illinois, some of them located a long distance from St. Louis; gentlemen who have had no previous experience as medical teachers, and granting great ability as scientists, it would seem could be of little real value when working at such a long range. At least one of them has accepted a lectureship in two different schools. We shall watch with great interest the two recently reorganized and rehabilitated medical colleges of the Mound City, this and the so-called National Medical University. We understand that the latter school is a combination of the American Medical College, a reformed eclectic institution, and the Hippocratean College, which, we believe, was a "sun down" institution.

CENTENARY OF DR. FRANKLIN R. PITNER, OF CLAY CITY, ILL.

Our veteran Ex-President, Dr. W. O. Ensign, of Rutland, a devoted friend of every member of the organization, has called attention to the fact that on Oct. 9, 1912, our fellow member, Dr. Franklin R. Pitner, of Clay City, Ill., will celebrate the one hundredth anniversary of his birth. Until a few years ago Dr. Pitner was in active practice, answering professional calls from city and country at all hours of the day and night, and the fact that he will have attained this great age should be made a matter of unusual attention on the part of the members of our organization. We therefore have requested Dr. T. J. Pitner, of Jacksonville, a nephew, to write up a biographical sketch of his uncle, and we expect to print a half-tone cut of the venerable one in our next issue. We also suggest that every one of our members send Dr. Pitner a postal card of congratulation, which shall reach him on the anniversary of his birth. All societies meeting between now and that time would do honor to themselves and their friends by preparing resolutions of congratulation which should be forwarded on or before that date.

Dr. Ensign calls attention to the fact that at the Springfield meeting of 1900, he was instrumental in getting together and having photographed some half dozen of the venerable members in attendance; these were: Dr. L. G. Thompson, Lacon, age 79, present at the first meeting; Dr. J. T. Stewart, Peoria, age 76; Dr. Robert Boal, Lacon, age 94, present at the first meeting; Dr. N. S. Davis, Chicago, age 84; Dr. F. R. Pitner, Clay City, age 88. All but Dr. Pitner himself have passed to the other side. Having reached this great age he remains to receive the congratulations of his brethren.

DR. CHRISTIE NO LONGER PRESIDENT OF THE TRI-STATE SOCIETY

That organization known as the Tri-State Medical Society of Iowa, Illinois and Missouri, has announced that its twentieth annual meeting will be held at Jacksonville, Ill., Sept. 24 and 25, 1912. The program states that Dr. Robert J. Christie, of Quincy, will preside and deliver an address, but we understand from Dr. Christie that he sent his resignation to the Secretary last November and does not expect to attend the meeting. Just what good purposes this triple-headed organization has ever served the medical world we have never been able to discover. The head of it having decapitated himself we suggest that it would be a good idea for the remaining members to dislocate themselves and disperse.

OSTEOPATHIC OOZINGS

The Osteopaths announce with great clatter that a research institution with a million dollars endowment fund will be established in Chicago. True only $100,000 in actual cash of this amount is in sight. The mas-

sage artists claim they have visions of the other nine-tenths. One of the promotors has expressed himself as follows: "The prime object of the institution will be to verify osteopathic theories regarding diseases and health with regard to the condition of the body and the derangement of its structure. We will seek for the cause of disease the same as the Rockefeller institute."

Correspondence

THE ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS AND BARNES UNIVERSITY

ST. LOUIS, MO., Aug. 23, 1912.

To the Editor:—In reply to yours of the 22d, I am sending you an advance copy of the current *Bulletin* of the reorganized college of Physicians and Surgeons. As you will note by the announcement on page 3, there has been a complete reorganization, not only in men, but in spirit and methods. I personally have no desire to be connected with a medical school which is not in full accord with the tendency of the times and, so long as I am in official position, propose that the P. & S. shall be recognized as a clean and efficient school, or I will withdraw from it.

We have completely reconstructed and modernized the building, have entirely re-equipped the laboratories and, even with the short time we have been working, have an abundant clinic. We hope to deserve the respect and good will of every member in the profession.

If the statement of facts as set forth in our *Bulletin* meet with your approval, I shall take it as a personal favor if you will make mention of the fact of the reorganization and reconstruction of this school in your news columns. Very truly yours,

W. U. KENNEDY.

INTERNATIONAL CONGRESS OF HYGIENE IN SEPTEMBER

SPRINGFIELD, ILL., Aug. 2, 1912.

To the Editor:—I beg leave to call the attention of the membership of the Illinois State Medical Society through the columns of your journal to the approaching International Congress of Hygiene and Demography, which will convene in Washington, D. C., September 23 to 28.

This Congress meets in Washington in consequence of an invitation extended by the Government of the United States at the Fourteenth International Congress in session at Berlin in September, 1907. In pursuance of a joint resolution of the Congress of the United States, the Department of State addressed a circular letter inviting the governments, including state, provincial and municipal, to participate in this Congress. Under date of Feb. 4, 1911, an invitation to the governor of each state and the District of Columbia was extended, and acceptances have been

received and committees formed from most all of the states. The committee from Illinois, of which I have the honor to be a member, would especially urge the medical profession to become members of this Congress, which embraces the entire field of preventive medicine. It is urged that as many members as possible attend the Congress, and if they cannot attend at least become members and receive the benefit of transactions, which will amount to more than 3,000 pages, and will be of extraordinary value.

I trust that you may commend this Congress editorially and publish this invitation if it meets with your approval.

An exhibit is planned which will cover every phase of constructive work in modern hygiene, and this in itself will be educational and worthy of being viewed by every member of our profession. I am,

Respectfully yours,

FRANK P. NORBURY, M.D.

SPECIAL ARTICLE

THE INTERNATIONAL TUBERCULOSIS CONGRESS IN ROME; AN OPTIMISTIC VIEW OF THE TUBERCULOSIS PROBLEM; AUTO-IMMUNIZATION

The eyes of the entire medical world were turned in April last toward Rome. The International Tuberculosis Congress, its discussions, reports, lectures and conclusions interest humanity to an extent incomprehensible fifty years ago.

It is extremely satisfactory to read Professor Sanarelli's address, optimistic in the extreme, which was delivered in the Roman Hall of the Castel St. Angelo, April 18. The account is taken from the *Tribuna*, the principal Roman paper.

Professor Sanarelli occupies the chair of hygiene in the University of Bologna, one of the oldest universities in the world.

Professor Sanarelli affirms that human beings who live in cities and towns, or crowded in any social center, can never consider themselves immune to the tubercular germ, which is ubiquitous, because spread and diffused by chronic cases which penetrate and circulate everywhere.

The latest biologic reactions obtained by means of tuberculin and statistics of autopsies all over the world confirm the fact that no individual of middle age who has lived an urban life has been able to escape some time or other an attack of Koch bacillus.

How is it, then, that the entire human race is not extinct? The human race has not died out because it is slowly becoming immune and vaccinating itself against the Koch bacillus.

Sanarelli does not admit the old doctrine of hereditary predisposition, nor will he admit that the children of consumptive parents are inevitably tubercular from their birth.

Contrary to all present ideas, he believes that what is inherited is not predisposition, but progressive immunity. The further mankind has lived from tubercular contact, the less has it been influenced by the tubercular virus, the more sensitive and vulnerable is it when met by tuberculosis. Every time a civilized man, carrying the tubercular germs with him, comes in contact with new races, exempt from every tubercular antecedent, we find a formidable outbreak of the disease similar to an epidemic, with rapid and fatal results. But after a few generations have passed, the disease takes on a slow and chronic course, as in civilized countries. This is indicative of an indifference, a toleration which is slowly increasing — it is the demonstration of a sort of biologic equilibrium which is taking place between the tuberculized object and the resistance of his social organism. This biologic equilibrium is due not only to hereditary immunity, but also to a real but unconscious vaccination which appears in all social tuberculized environments, and which takes place in connection with other infectious diseases.

Professor Sanarelli introduces us to primitive races, to the Red Indians, the Negroes of the interior of Africa, to the indigenous races of the Far East, to the Kalmuks of the Volga, to the Polynesians, etc., and shows that their first contact with civilized man was so fatal that tuberculosis ravaged and devastated vast districts.

EMIGRANTS AND SOLDIERS

Emigrants and soldiers can be compared in many ways to individuals of primitive races. Of Italian emigrants to the United States, those who more easily become a prey to tuberculosis are not the inhabitants of Northern Italy, Lombardy and Liguria, provinces where the disease is widely spread, but the natives of the South, from the Abruzzi, Basilicata and Calabria, districts which are freer from tuberculosis than any others in Europe in this respect. Next to negro children the children of Italian emigrants to the States pay the heaviest death tribute.

A similar phenomenon appears in military organizations. It is well known that tuberculosis is a veritable scourge in all European armies. It was generally believed that the recruits did not become infected in the barracks, but brought the disease with them. Professor Sanarelli shows that if this were the case in Italy, the greater number of deaths would be from the infected provinces, such as Liguria. Instead, it is the contrary which happens. The soldiers who come from the hitherto immune districts are the ones who catch the disease. The phenomenon is the same in all countries and in all social centers. It is the purest race, without tubercular antecedents, which pays the heaviest toll, when brought in contact with the Koch bacillus.

But in all human races we soon perceive a collective habit due to immune phenomena and to that unconscious vaccination which appears in any impregnated social environment in consequence of the introduction into the human organism of isolated tubercular bacilli which have become innocuous. Similar analogous symptoms have been observed in diphtheria, small-pox, scarlet fever, etc.

With this law of gradual immunity he explains the reasons and causes of congenital infection. The transmission of tuberculosis from a consumptive parent to a healthy one is in some cases very frequent, in others very rare.

The exterior appearance of health as to resistance or receptivity is absolutely misleading. The anemic offspring of a family who has lived long in a town may seem, at first sight, biologically inferior to the healthy child of a young country couple; but in contact with tuberculosis, the flourishing country product is unarmed compared to the pale-faced urban one. This law gives us the reason of the strong resistance of the Semitic race to pathologic influences of the urban environment, and to the great White Plague. For twenty centuries the Semitic race has lived a strictly city life, in the worst possible conditions, on account of its special tendency to a mercantile and commercial life. It evoluted in various social centers, guarding jealously its own ethnologic type with all its moral and physical attributes, keeping up a regimen of life which expresses the most rigorous biologic isolation.

The consequence is that as a result of this strictly city evolution, the Jew has acquired the magnificent privilege of being the race the most capable of resistance to tuberculosis. But this is on the condition that he remain in the town; he falls a victim to it, when he takes to work in the fields in Russia.

IN ENGLAND

This condition is repeated on a much larger scale in England, with the intervention of analogous favorable conditions.

Professor Sanarelli has studied it in England, and described lucidly the beginnings of English industrial life. When the exodus from the country began, together with the concentration in the industrial and manufacturing centers of the rural population, consumption appeared like the plague, in an epidemic form. At that time, in the seventeenth century, the epidemic course of consumption was compared to that of smallpox. Conditions became worse with the discoveries of machinery and steam, which brought about a colossal concentration of the rural population in industrial centers which were ravaged by tuberculosis. But by degrees in England, the period of collective toleration and immunity set in. Long before any public or private efforts were started to fight the disease, all through the eighteenth and nineteenth centuries, tuberculosis began to be limited within narrower bounds, so that to-day the mortality from tuberculosis is less in England than in any other civilized country.

Prussia will soon follow the same biologic evolution as England, because there the industrial collectivity and progressive trend to city life, which began in the latter half of the last century, has already assumed gigantic proportions, and at the same time tuberculosis is decreasing. In conclusion, Professor Sanarelli maintains that to the cruel and pitiless doctrine of hereditary predisposition we must substitute the law of hereditary immunity.

The theory of congenital predisposition places all those who are threatened with it in the terrible alternative of isolation from the world,

or of premature death. The theory of hereditary immunity brings them back again into human society.

The rational defence against tuberculosis must not exhaust all its resources on the sick, but must concentrate its best efforts on the healthy individuals, because they alone are of real and immediate value and represent the future.

While the world is waiting for an anti-tubercular vaccine, which, sooner or later, will be used as the sole efficacious expedient for the public health, Sanarelli maintains that public authorities have for the time being a double task. First, that of carrying out a building policy, which, while it spreads human habitations over the largest possible area, will facilitate, if not the disappearance (which is absurd) at least the dilution and rarefaction of the tubercular bacilli in the air, rendering the causes of infection less frequent, and the contamination, which is inevitable in social centers, more innocuous.

In the second place, to look after and cure the latent tubercular individuals. The greater proportion of our young people who live in cities are already "bacillized" and therefore unconscious carriers of the silent and mysterious disease. We must save these young ones before they join the phalanx of the tubercular victims. The latest tuberculin reactions enable us to-day to discover at once all those who are attacked by the microbe. They must become *rural* for the time being. Not so much because the country life has a special curative effect, but because in the pure air, free from the germ, far from the danger of any reinfection, patients with a latent tendency to it can get well, can become immune, and can put themselves in a position to return to social life with better protection against the disease. The object of the anti-tubercular fight of the future must be to transform the collective enviroment in which we live and to prevent the concentration of tubercular germs.

The task to be accomplished is tremendous, because the anti-tubercular struggle is not only a social one, it is a phase of the external human struggle for life. But it is not true that the future of the human race will be progressively more and more in danger from tuberculosis, as pessimists affirm.

Professor Sanarelli is an optimist; he affirms that the social organism possesses endless resources of vitality and adaptability, and that the accidental disharmonies which disturb the marvellous equilibrium of biologic laws which regulate its life always find compensating energetic forces, so that we are authorized to consider with the greatest optimism, even with regard to tuberculosis, the future destiny of the human race.

—*Translated by* FANNY M. CARPENTER.

COUNTY AND DISTRICT SOCIETIES

CHRISTIAN COUNTY

The meeting of the Christian County Medical Society was held July 18, 1912. Charges were made by one of the Taylorville members against two of his brother physicians of unprofessional conduct in having their names printed in the local papers in connection with their cases, and also for fee splitting. A resolution was also adopted asking the newspapers to refrain from mentioning the name of any member of that society in connection with cases. The secretary has addressed the following communication to the Editor of the *Daily Breeze*.

My Dear Sir:—Inasmuch as the medical profession has for many years endeavored to afford each member of that noble calling an equal opportunity before the general public to win honor and reputation in his chosen calling, and at the same time has surrounded him with the protection of its united body, it holds that every physician is in honor bound to heed its behests and admonitions. One of these behests is that it is unbecoming for a physician to have his name appear frequently in the public prints in connection with his work, thus putting his calling in the same class as the tradesman bartering his wares and at the same time taking an unprofessional advantage of his fellow physicians. Therefore, and for the above reasons, the Christian County Medical Society at its regular meeting held at the Christian County Court House on the 18th day of July, 1912, passed a resolution instructing the secretary to request the papers of this city and the county, when making reports of medical or surgical cases, to omit the name of the physician or of the physicians as the case may be.

According to the above resolution I most respectfully submit the above request. Truly, Secretary.

The society has also protested to the Board of Supervisors against payment of county funds to physicians residing outside the county.

CLARK COUNTY

The Clark County Medical Society met in West Union, Ill., Aug. 8, 1912, at 2 p. m. Members present: Burnsides, Pearce, Duncan, S. C. Bradley, Mitchell, Smith, Haslitt, McCullough, Johnson, S. W. Weir and L. J. Weir. Visitors present: Drs. Price, Low, Rafferty and Carlisle of Robinson, Ill. The minutes of previous meeting were read and approved. S. W. Weir, having moved from the county, resigned as secretary-treasurer and L. J. Weir was elected to that office.

L. A. Burnsides read a valuable paper on "Gastro-Intestinal Diseases in Children," emphasizing cause and treatment especially. The discussion of the subject was participated in by nearly all members and visitors present. Among the points made were the importance of cold nights or chilling of the surface as a cause of diarrhea, too much food, too frequent feeding, bottle feeding, tainted food. In treatment eliminate the cause.

It seemed to be the consensus of opinion that diarrheal diseases in children are much less frequent and less serious now than several years ago due largely to the more thorough understanding among doctors and the laity of bacteria and their deleterious effect on milk, meat and other foods, especially in hot weather, and the spread of the information how to prevent contamination of food and the importance of not feeding too much nor too frequently. Fresh cow's milk kept cool, diluted properly and warmed when given was considered the best food for babies that could not be breast-fed, the latter of course, being a great deal the

best. In serious chronic indigestion and diarrhea no two cases are alike just as no two faces are exactly alike and the management and treatment must be different in different cases, diet being of paramount importance; egg-water, meat broths, barley-water, rice-water, etc., to be considered in older children or as substitutes for cow's milk in infants. In acute gastro-intestinal disturbances it is often best not to give milk or any other food for a day or two, let the stomach and bowels rest; permitting water to be taken freely as a rule.

Many interesting cases were reported and discussed.

A plan was considered and will probably be arranged to have a public lecture given in the near future on prevention of disease.

After adjournment, all were invited to a lawn where home-grown water melons were prepared according to the pure food and drug act, which were very much enjoyed.

L. J. WEIR, Secretary.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, May 15, 1912

The meeting of May 15, 1912, was a joint meeting with the South Side Branch with Dr. D. N. Eisendrath, president of the South Side Branch, in the chair. Dr. Geo. W. Crile, Cleveland, Ohio (by invitation), read a paper on "Kinetic Theory of Certain Diseases, with Special Reference to Internal Secretions." Dr. C. G. Grulee read a paper on "Relation of the Parathyroid Gland to Infantile Tetany (Spasmophilia)." Drs. J. C. Friedman and Sol. Strouse presented a paper on "Diagnostic Value of the Sugar Tolerance Test in Disturbances of the Internal Secretions." Dr. A. Werelius read a paper on "Do the Glands of Internal Secretions Functionate During Intra-Uterine Life?"

DISCUSSION ON THE PAPER OF DR. CRILE

Dr. Frank Billings: This is such a fascinating subject and so well presented by Dr. Crile that one is almost tempted to believe him. That the thyroid and other glands secrete substances which give rise to certain conditions is unquestioned. That there is a relation between these secretions and exophthalmic goiter is shown in the clinical manifestations of the disease. It is also certain that environment of the individual and the exhaustion of his brain and nervous apparatus, motor and emotional, give rise to enlargement of the thyroid and oversecretion, setting up a vicious circle which results in that disease entity.

In clinical work one finds examples of patients whose condition could be explained on the grounds mentioned by Dr. Crile. It must be at least fifteen years since I reported to this society sixty cases of patients suffering from Graves' disease. That was before the days of much surgery for that condition. All these patients were treated by rest. One of these patients I kept at rest for eighteen months, another for fifteen months and a third for nine months. As I recall it, forty of the sixty patients were improved and twenty were cured. That, of course, shows that proper environment and rest may so quiet the nervous system that there is no longer a need for the secretion of the thyroid, and therefore the gland diminishes both in size and in function.

So that while I am ready in a way to accept the principles advanced by Dr. Crile, still I cannot accept his propositions with reference to other conditions.

I think that it has been proved that in a typical case of Bright's disease, with high arterial tension, there is not an over-section of the adrenals; there is not in the blood a greater amount of adrenalin or epinephrin. Bright's disease is just as apt to occur in individuals whose lives and surroundings are not such as to excite secretion as it is in the other class. Take the farmer, for instance, who is, perhaps, physically excited by work, but who shows no mental excitement. I saw a man to-day, aged 68 years, with high arterial tension, 240 mm., an enormously hypertrophied heart and dilated aorta, arteriosclerosis and angina pectoris, and he has done nothing but milk cows and never drank any alcohol.

On the other hand, one living in this big city, with its excitement and flurry, and some of the healthiest men I have met are men who are under strain, mental strain, without very much excitement otherwise, who would disprove Dr. Crile's theory. So that I cannot accept his proposition that the thyrogenetic elements of fear or over-excitement stimulate internal secretion so as to cause in a certain class of individuals a greater susceptibility to that disease. Still what he has said is expressive of the man. His initiative and industry, if possessed by us all would lead to much additional knowledge and information that we do not possess to-day. While all he has said will not eventually be borne out by fact, still it cannot fail to prove of enormous value to us.

As to Dr. Friedman's paper, his subject interests any clinician who thinks. My attention was called to the fact of the relation of the internal organs and their secretions to the glycolytic powers of the body, and for at least ten years I have tested out many patients suffering from exophthalmic goiter. I have talked to the surgeons to adopt measures of research if they would aid the internist in this direction by waiting longer before they operate on these patients.

My observation of these patients has been based on the statements of physiologists that the human body ought to destroy 160 grams of dextrose if taken on an empty stomach. I have used 50 grams on a fasting stomach with many of these patients and over 50 per cent. of the patients tested show an inhibitory influence associated with this thyroid enlargement on the glycolytic function of the body.

Such clinical experiments as have been done by Drs. Friedman and Strouse are the things all of us ought to do in our hospital work. That is the work which will result in the accumulation of knowledge which we lack in such diseases as diabetes mellitus. We talk in a general way about the glycolytic powers of the body in relation to these glands. All the work has been done on animals and we have neglected to make observations in our hospitals. If the surgeon would give us the opportunity to do such work as that on all classes of patients or do that work themselves, a vast amount of knowledge would come to us.

Dr. A. B. Kanavel: I have examined carefully all the cases of hypophyseal disease which have come to my attention with regard to the sugar reaction, and while in the main my results were the same as those reported by Cushing, there have been exceptions. In a case, a cyst of the hypophysis of eight years' duration, there was a marked glycosuria while the patient was in the hospital. If we generalize on such things, we are apt to make mistakes. Surgeons should be scientists and not carpenters. They should examine all their cases carefully.

Dr. A. D. Bevan: One might say that the dreams of to-day often prove to be the realities of to-morrow. I think that Dr. Crile's work is certainly original; it shows imagination and enthusiasm, to say nothing of hard work. I must admit, however, that I cannot accept all he says. I do not believe that Graves' disease is the result of emotions. I have been rather unfortunate in imitating him in his efforts at stealing away the goiter. I heard Dr. Crile present this subject before, how he would without the knowledge of the patient give a little nitrous oxid, claiming that he was going to spray the throat, and then remove the goiter without making any impression on the patient's brain. I tried that method once, and when the lady came out from under the anesthetic she said so many things to me that I have not tried to steal away any more goiters.

In presenting such a new idea as this, we must be careful to analyze it leisurely and judicially. I feel about this anoci association that important as are the changes on the brain cells during anesthesia, much more important are the changes in other cells of the body, the kidneys, liver, heart, etc. The impressions on the brain cells tell a very small part of the story.

He and I have had a controversy on this point, especially on the methods of anesthesia. I advocated giving the anesthetic as simply as possible instead of by the more complicated scheme which he has introduced with his anoci association. I sent him my pamphlet on anesthesia and wrote on it, "Read, repent and reform." He said he was too old a sinner to do that. He made a good suggestion, however. He said he would look up his mortality in his last thousand cases and tabulate

the results, and that I was to do likewise. That is one of the ways to clear up such a problem, and we now are at work on it. He is taking his last thousand cases of anoci association, and I am taking my last thousand cases. When the work is completed we will give you our results.

Dr. A. J. Ochsner: I have always been interested in what Dr. Crile is doing. There is something in what Dr. Crile has told us. I have had friends make my hospitals rounds with me and try to pick out the patients operated on the day before, and they failed to do it, because we never do anything that we do not have to do during an operation. We first try to eliminate the harmful and then the harmless things that are useless, and in this manner we get down to a point where there are only a few things left to do. As a result of this method the amount of traumatism is reduced to a minimum.

That is what Dr. Crile is doing. He is enthusiastic about keeping these patients in the proper condition before operation, and he is getting good results from his methods. His enthusiasm and his research are of benefit to us all.

Dr. G. W. Crile (closing the discussion): I was very much interested in the comments of Dr. Billings.

I dare say that Dr. Billings will agree that heavy physical labor and unusual emotional excitation react on the body injuriously. The expectance of life is known to be cut short by such strain as the Chinese burden bearers assume, certain heavy industrial labor.

I have never had Dr. Bevan's experience in removing the thyroid without the knowledge of the patient. Of course I always have the full consent of my patients. On the contrary, I have received only appreciation for the consideration I have shown them.

If the entire brain is asleep, the patient is dead. If only a part is asleep, that part which remains awake is as much influenced under ether anesthesia as if the operation is done while the patient is wide awake. The anesthesia holds in bondage the subconscious brain. A patient in good physical condition goes to the operating room and returns half an hour later a wreck. What has happened? Just the same thing has happened as if the patient had been subjected to a terrible accident while wide awake. The subjective mind is wide awake during an operation. The brain is alive to all stimuli, and knowing that fact we should operate on the principle of anoci association.

When Dr. Bevan and I produce our tables, if his is better than mine, remember that anoci *association* is being backed up by a less well qualified surgeon than is his *ether* method.

DOUGLAS COUNTY

Dr. Carl E. Black of Jacksonville addressed the Douglas County Medical Society at their regular quarterly meeting held in Tuscola, July 27, 1912, on the subject "Displacements of the Colon," illustrated by stereopticon views, giving history of case operated on and complete history of the various causes of this condition.

The paper was voted a decided success by our Society coupled with a request that he return at some future time.

EDGAR COUNTY

The Edgar County Medical Society met in the Carnegie Library, at Paris, Wednesday, July 31. Dr. E. N. Cooley, of Danville, delivered an address. Dr. W. S. Jones, of Redmon, read a paper on "Medical Legislation by Committee."

JERSEY COUNTY

The Jersey County Medical Society met at the Court House at 2 p. m., July 9, at Jerseyville, pursuant to adjournment, with Dr. A. K. Van Horne in the chair. The following members were present: Drs. Van Horne, Barnett, Gledhill, Tittering-

ton, Bohannan, Cheney, and C. W. Evans, of Fieldon, Ill., was a visitor. On motion the reading of the minutes of the previous meeting was dispensed with.

Dr. Bohannan read a paper on "Summer Diarrhea"; discussion followed by Drs. Gledhill, Titterington, Evans and Barnett. Dr. C. W. Evans' application for membership in this society was offered. On motion of Dr. Titterington, Dr. Evans was requested to address this society at the September meeting on a subject of his own choosing. On motion the society adjourned until the August meeting.

MACOUPIN COUNTY

The Macoupin County Medical Society held its third quarterly meeting in the I. O. O. F. rooms at Gillespie, July 23, 1912.

The meeting was called to order by the president, Dr. C. D. King. The secretary, Dr. J. P. Matthews, then presented Dr. J. W. Morgan, the new president, who with a short address took the gavel and assumed the office. Dr. T. D. Doan, of Scottville, was escorted to the secretary's desk and assumed the duties to which he had been elected.

The names of Drs. Wm. L. Powell and I. H. Neece, of Palmyra, were presented for membership, and on being presented to the censors were according to custom held over till the next meeting.

After a report from the House of Delegates by Dr. Doan, the society adjourned for lunch, being the guests of the physicians of Gillespie.

Dr. William Engelbach, Professor of Medicine at St. Louis University, gave a stereopticon demonstration with a talk on "The Diagnosis of Unusual Diseases of the Thorax." Discussion by Drs. Stericker and Titterington, of Springfield, and others.

Dr. Renner, of Benld, gave a paper on "The Hygiene of Pregnancy and the Management of Normal Labor." After a vote of thanks to Dr. Engelbach and all other doctors who helped to make the meeting a success, the society adjourned to meet at Palmyra, October 22.

The meeting was considered one of the most interesting the society has held for years, about thirty-five physicians being present.

Those who were present at the luncheon were: Drs. William Engelbach, of St. Louis; G. F. Stericker and Titterington, of Springfield; M. B. Titterington, of Jerseyville; J. W. Barcus, J. S. Collins, L. H. Corr, J. P. Denby, J. B. Liston, J. P. Matthews, of Carlinville; W. M. Gross, H. W. Rice, E. B. Hobson, J. N. English, L. H. Denny, C. D. King, J. H. Hall, of Gillespie; A. H. Simmons, Girard; Ben Hudson, E. W. Crum, Wm. L. Powell, I. H. Neece, all of Palmyra; W. B. Dalton, T. D. Doan, of Scottville; J. L. Kerrill, R. R. Bobzin of Shipman; T. W. Morgan, E. R. Motley, of Virden.

MADISON COUNTY

The July meeting of the Madison County Medical Society was held under the trees on the lawn in front of the residence of Dr. and Mrs. W. H. C. Smith, of Godfrey. Owing to the absence of the president, Dr. G. Taphorn of Alton was elected president pro tem. Members present: Drs. Taphorn, Wedig, Halliburton, Yerkes, Hirsch, Wahl, Oliver, Sims, Barnsback, Beard, Burroughs, Shaff, Joesting, Duggan, Cook, Fisher, Tulley, Eaker, Smith, Davis and E. W. Fiegenbaum. Visitors: Dr. James Squires of Carrollton, and Dr. O. O. Gibberson of Alton. After a short business session, in which Dr. M. D. Tibbetts of Highland was elected to membership, the secretary read a paper prepared by our president, Dr. E. C. Ferguson, who was unavoidably absent. The paper dealt with "Some Causes of Some Nephritic Symptoms," and gave evidence of much thought and research, throwing considerable light on some of the obscure phases of nephritis and its complications. The paper was highly appreciated by the members and adds to the literature on the subject. The chair appointed Drs. Smith, Fiegenbaum and

Shaff as a committee on resolutions on the death of our fellow member, Dr. A. J. Ihne, of Fosterburg. These resolutions will be published in full in our September issue. Dr. J. M. Pfeiffenberger was reported in the hospital at Alton, following appendectomy, and Dr. A. E. Cook was instructed to send flowers. On motion of Dr. W. W. Halliburton, Alton was selected as our next meeting place to include a boat ride on the river. On motion of Dr. E. A. Cook, a vote of thanks was extended to our hostess, Mrs. W. H. C. Smith, for the generous hospitality extended to the profession and for the elegant refreshments.

PIKE COUNTY.

The regular July meeting of the Pike County Medical Society was held at Pleasant Hill, July 25, 1912. After a bountiful dinner served by the ladies of the Methodist Church, in the dining room of the church, the society adjourned to the parlors for the meeting. President Harrison in the chair. Members present were: Drs. Gay, Emma Gay, Aiton, Pollock, Thurman, Beavers, Kaylor, McKinney and Duffield. Visitors: Drs. Nickerson, Wells and Miller from Quincy; Drs. Dreyfuss, Heatherton, Goodman and Pierson from Louisiana, Missouri; Drs. Bankhead and Bartlett from Clarksville, Missouri. After an invocation by Rev. Mitchell, the society proceeded to business.

Dr. L. H. A. Nickerson read a paper on "Summer Diarrhea," besides giving a talk on official subjects. In the absence of Dr. W. W. Kuntz who was on the program, Dr. Duffield gave a demonstration on how to resuscitate the newly born by his method. Dr. J. E. Miller read a paper on "Necessary Operation Often Neglected by the General Practitioner." Dr. L. S. Lacey read a paper written by the late Dr. J. Smith Thomas, shortly before death, on the 19th of July, entitled "Good Doctors." This was much appreciated by all who were intimately acquainted with Dr. Thomas.

The usual resolutions of respect were read and ordered to become a part of our minutes and to be published in the local paper. Resolutions were adopted regarding our entertainment by the citizens of Pleasant Hill. Society adjourned subject to call of society.

PUTNAM COUNTY

Fee bill adopted by the physicians of Putnam County:

Office Practice

For ordinary advice given at office	$1.00
For such advice when minute physical exploration is required	3.00
Advice by telephone	1.00
For written opinion or advice to patient	5.00
For an opinion involving a question of law	25.00
Microscopical examination of urine	5.00
Microscopical examination of sputum	5.00
For first advice in gonorrhea	5.00
For vaccination	1.00
Urinalysis	1.00
Minor surgical dressings	1.50

General Practice

For a visit within city limits	1.50
For a night call within city limits (after 9 p. m.)	2.00
Visit after 9 o'clock	2.50
When the physician is detained, for each hour	1.00
For a visit as consulting physician in city (in medical case)	5.00
For visit outside city limits, each mile and major fraction thereof	1.00
For every other member of the family prescribed for	.50

Night visits in the country, 50 per cent. added to regular fee.....
For consultation in country, the same fee, with the addition of mileage....
For each visit in case of small-pox..... 5.00
Administration of antitoxin, each case in addition to regular fee..... 2.00

Obstetrical Practice

For an ordinary case of midwifery in the city including 2 subsequent visits.. 15.00
For the application of forceps..... 20.00
For any indisposition of mother or child, after the second visit, the same fee as an ordinary visit.....
For every hour the physician is detained beyond four, an additional fee of.. 1.00
For delivery after-birth alone..... 10.00
For insurance examination for fraternal societies..... 1.00
For a postmortem examination in a case of legal investigation..... 25.00
For a postmortem examination made at the request of the family or relations 20.00
Qualifying as an expert witness, per day or any fraction thereof..... 25.00

For any medical or surgical advice not named in this minimum fee bill or for any exceptional or unforeseen conditions occurring in an operation, a charge will be made proportionate to its nature, extent and importance.

All visits to be charged for at same rate, whether made in response to a call to office or while in the neighborhood.

DR. L. B. ELLISTON, DR. H. M. WILSON,
DR. JOHN AIMONE, DR. H. B. JOYNSON,
DR. FRED C. TAYLOR, DR. G. A. MCCORMICK,
DR. WM. A. SIMMONS, DR. M. C. WEEKS.

ROCK ISLAND COUNTY

The bimonthly meeting of the Rock Island County Medical Society was held at Rock Island, August 13, with twenty-five members in attendance. Dr. L. H. A. Nickerson, of Quincy, president of the Illinois State Medical Society addressed the society and urged an increased cooperation of county societies with the state organization, saying that the result would make the state society more effective; its influence would be more powerful and greater things would be accomplished. Dr. Nickerson also read a paper on "Headaches, the Symptoms and Methods of Treatment." Dr. W. H. Ludewig of Rock Island opened a discussion on the subject. Dr. A. E. Williams gave a clinical demonstration, followed by a paper on "Vaccines," by Dr. J. C. Souders of Rock Island. Dr. A. M. Beal led the discussion on this subject. After the program the members gathered at the New Harper Hotel where a dinner was served at 8 o'clock.

STEPHENSON COUNTY

The Stephenson County Medical Society held its meeting at Krape Park, Tuesday afternoon, July 30, with a picnic program. The literary program began at 3 o'clock on the general subject of "Appendicitis." A lunch was served at 7 p. m. The following program was rendered: "Etiology," Dr. Collins; Discussion, Dr. Harlan. "Symptoms and Diagnosis," Dr. Beck; discussion, Dr. Hutchins. "Medical Treatment," Dr. Burns; discussion, Dr. E. H. Best. "Surgical Treatment," Dr. Karcher; discussion, Dr. Arnold. "From the Viewpoint of the Rural Physician," Dr. Thompson, Cedarville.

WABASH COUNTY

The meeting of the Wabash County Medical Society was held in Schneck's hall at Mt. Carmel, July 23. It was one of the best and most helpful in the history of the organization. The meeting was called for 3 o'clock and did not adjourn until 6 p. m.

Dr. B. G. R. Williams of Paris, Ill., the principal speaker of the occasion, read a paper on "The Diagnosis of Incipient Phthisis" which was ably handled by the doctor.

Dr. S. W. Schneck, of Mt. Carmel, president of the society, presented a paper on "Pregnancy." He also gave a report of the State Medical meeting which was held in May last at Springfield, and to which he was a delegate from this county. The report was well received by all.

There were no clinics presented and instead of this some special laboratory tests were made.

The following from out of the city attended the meeting: Drs. Fred Brines, of Lancaster, G. B. Reis, of Albion; R. J. McMurray, of St. Francisville, and C. E. Gilliatt, of Allendale.

WILLIAMSON COUNTY

The June meeting held on the 25th was really a summer picnic held at Marion Electric Park and given over to fun, fishing and feasting.

The July meeting was held the 23d, in the Elk's Home at Marion, when the following program was to be heard: "Therapeutic Value of and Indications for the Use of Emetin and Copper Arsenite," Dr. G. J. Baker, Jr. Discussion, Drs. Miller and G. W. Evans. "Therapeutic Value of and the Indications for the Use of the Various Sulphocarbolates in Treating Bowel Affections," Dr. Perry. Discussion, Drs. Boles, F. C. Murrah, F. M. Sanders. Clinics and reporting cases.

WOODFORD COUNTY

The Woodford County Medical Society met in annual session in Eureka, May 7, 1912, with President J. I. Knoblauch in the chair. Those responding to roll call were J. I. Knoblauch, James Twedale, N. B. Crawford, C. B. Higby, S. H. Rutledge F. E. Briggs, E. R. McBroom, H. A. Millard. Minutes of previous meeting read and approved. Annual report of the secretary-treasurer read and approved. Officers were then elected for the ensuing year as follows: president, C. B. Higby; vice-president, E. R. McBroom; secretary-treasurer, H. A. Millard; censor for three years, F. E. Briggs.

Dr. S. H. Rutledge then read a very able paper on uremia and reported a number of very interesting cases which were freely discussed and much enjoyed by all present. Society then adjourned to meet in Eureka October 1, 1912.

H. A. MILLARD, Secretary.

REGISTRATION AT SPRINGFIELD MEETING

The following is a list of members who attended the last Annual Meeting of the Illinois State Medical Society:

Adams, A. L., Jacksonville.
Adams, E. M., Gridley.
Agnew, Frank M., Makanda.
Albro, M. Z., Chicago.
Alguire, Annie B., Belvidere.
Allaben, J. E., Rockford.
Allen, Dudley P., Cleveland.
Allison, F. M., Gardner.
Amerson, G. C., Chicago.
Armstrong, G. L., Taylorville.
Aschauer, A. G., Springfield.
Aschauer, H. A., Springfield.
Ashley, Thad W., Springfield.

Babcock, H. S., Danville.
Babcock, O. B., Springfield.
Bachrach, Benj., Decatur.
Bacon, C. S., Chicago.
Bacon, J. B., Macomb.
Bacon, J. H., Peoria.
Bain, Paul E., Pleasant Plains.
Bain, W. G., Springfield.
Baker, J. W., Decatur.
Ball, A. W., Rushville.
Ball, E. B., Quincy.
Ballenger, W. L., Chicago.
Barbour, E. E., Peoria.
Barker, A. W., Springfield.
Barr, D. D., Taylorville.
Barringer, B. M., Emden.
Barton, Francis W., Danville.
Bascom, H. M., Peoria.
Bath, T. W., Bloomington.
Bauer, Emil F., Chicago.
Baum, William L., Chicago.
Baxter, A. C., Springfield.
Baxter, A. J., Astoria.
Baxter, G. E., Jacksonville.
Beck, Joseph C., Chicago.
Becker, Louis, Knoxville.
Behrendt, E. A., Bloomington.
Beifeld, A. H., Chicago.
Beirne, H. P., Quincy.
Bell, F. E., Mattoon.
Bell, William H., Decatur.
Bernard, E. L., Springfield.
Berry, R. D., Springfield.
Besley, Frederick A., Chicago.
Betz, Hugo E., Chicago.
Bing, E. A., Altamont.
Binney, R. W., Granite City.
Black, Carl E., Jacksonville.
Blackburn, W. R., Virginia.
Blaine, Walter C., Tuscola.
Blakely, James T., Fairfield.
Blakely, Osstella, Fairfield.
Blankmeyer, H. B., Springfield.
Blim, C., Crete.
Bolling, Louis A., Kramer, Ind.
Bondurant, Flint, Cairo.
Boot, G. W., Evanston.
Boswell, C. J., Mounds.
Bourne, Nathan L., Decatur.
Bouton, W. C., Waukegan.
Bowcock, C. M., Springfield.
Bowe, Edward, Jacksonville.
Bowles, Marion K., Joliet.
Bradley, M. M., Chatham.
Bradley, Stephen C., Marshall.
Brawley, Frank, Chicago.
Bremerman, L. W., Chicago.
Brennecke, H. A., Aurora.
Brigham, C. R., Brookville.
Brittin, A. L., Athens.
Brittin, E. H., Auburn.
Brittin, Wm. A., Virden.
Brobeck, A. L., Hoopeston.
Broderick, F. W., Sterling.
Brooks, E. W., Beecher City.
Brown, C. B., Sycamore.
Brown, Everett J., Decatur.
Brown, L. S., Hillsboro.
Buckmaster, F., Effingham.
Buford, Coleman, Chicago.
Bullard, Robert I., Springfield.
Burgess, Walter, Pana.
Burke, C. O., Atlanta.
Burke, P. M., LaSalle.
Burkhardt, C. F., Effingham.
Burnham, A. F., Mason City.
Burns, Howard, Carrollton.
Burnside, L. A., Mt. Vernon.
Burres, W. F., Urbana.
Burroughs, Lay G., Collinsville.
Burtt, A. S., Momence.
Butler, J. H., Hartsburg.
Byford, Harry T., Chicago.

Caldwell, C. B., Lincoln.
Campbell, Jas. E., Peoria.
Cantrall, J. W., Rochester.
Capel, A. B., Shawneetown.
Cappe, J. A., Chicago.
Carlisle, J. W., Robinson.
Carroll, C. L., Taylorville.
Carter, Charles W., Clinton.
Center, Chas. D., Quincy.
Chapin, C. H., Weldon.
Chapin, H. A., Whitehall.
Chapman, W. D., Silvis.
Christie, R. J., Quincy.
Churchill, James F., Chicago.
Cohenour, V. J., Joliet.
Colby, C. P., Springfield.
Cole, C. E., Jacksonville.
Coleman, J. E., Canton.
Collins, Clifford U., Peoria.
Compton, C. W., Springfield.
Cook, E. A., Alton.
Cooley, E. B., Danville.
Copenhaver, J. H., Bellflower.

Corbus, B. C., Chicago.
Corr, L. H., Carlinville.
Corwin, A. M., Chicago.
Cotton, A. C., Chicago.
Coultas, R. J., Mattoon.
Cowdin, Fred P., Curran.
Craig, R. H., Charleston.
Cravens, J. A., Greenfield.
Crawford, C. E., Rockford.
Crouch, E. L., Jacksonville.
Culbertson, Carey, Chicago.
Culbertson, F. D., Rushville.
Cunningham, H. A., Salem.
Curtis, W. H., Wilmington.

Dalton, W. B., Scottville.
Danford, R. C., Pana.
Davidson, W. P., Sullivan.
Davis, Carl, Chicago.
Davis, E. G., Lewiston.
Davison, Charles, Chicago.
Deal, D. W., Springfield.
Deal, John, Riverton.
Deal, John F. H., Springfield.
Deichmann, O. H., Springfield.
Denny, L. H., Gillespie.
DeSilva, Joseph, Rock Island.
Dewey, Grace, Jacksonville.
Dice, H. F., Ridgefarm.
Dixon, W. A., Decatur.
Doan, T. D., Scottville.
Dods, G. D. B., Chicago.
Dowd, R. P., Fisher.
Dowdall, G. G., Chicago.
Duffield, H. T., Pittsfield.
DuFour, W. G., Chenoa.
Duncan, W. P., Jacksonville.
Dunn, B. B., Perry.

Earle, C. A., Des Plaines.
Eckman, J. W., Winchester.
Edmunson, O. B., Clinton.
Egan, James A., Springfield.
Egan, Thos. S., Mapleton.
Ehresman, J. J., Carrollton.
Eisendrath, Daniel N., Chicago.
Elliott, C. A., Chicago.
Elliston, L. B., Magnolia.
Engelbrectson, Ferd., Chicago.
Epling, D. B., Petersburg.
Eskey, F. W., Tuscola.
Eustace, A. B., Chicago.
Evans, F. N., Springfield.
Evans, W. A., Chicago.

Fairbrother, H. C., East St. Louis.
Farrell, P. J. H., Chicago.
Fenelon, J. H., Bloomington.
Ferguson, E. C., Edwardsville.
Fiegenbaum, E. W., Edwardsville.
Fink, F. C., Pleasant Plains.
Firebaugh, I. L., Robinson.
Fisher, J. C., Decatur.
Fitzpatrick, N. W., Decatur.
Flatt, Stephen, Hardin.
Fleutje, Robt., Buffalo.
Fletcher, F. D., Springfield.
Fletcher, H. H., Winchester.
Flint, O. J., Princeton.
Floyd, Thos. W., Peoria.
Foley, Edward A., Jacksonville.
Foster, A. C., Decatur.
Frank, Jacob, Chicago.
Franke, W. E., Newton.
Friduss, S. L., Chicago.
Fuller, W. D., Chicago.
Fulton, L. W., Alexander.
Fuller, M. E., Wauconda.

Gale, F. C., Pekin.
Gardner, N. B., Loami.
Gardner, W. H., Bloomington.
Garm, R. H., Beardstown.
Garrison, W. H., Pearl.
Gatewood, Chicago.
Gault, H. L., Sparta.
Gehrmann, A., Chicago.
Gibson, E. P., Louisville.
Gillespie, E. S., Wenona.
Gillespie, T. W., Peoria.
Gleeson, Benjamin, Danville.
Glidden, S. C., Danville.
Gobble, H. W., Greenfield.
Godfrey, E. B., Springfield.
Graham, D. W., Chicago.
Graham, Ralph, Monmouth.
Gray, W. L., Champaign.
Gregory, A. R., Jacksonville.
Griffiths, T. H. D., Springfield.
Grinstead, W. F., Cairo.
Guthrie, T. A., LaSalle.
Gutting, W. V., Middletown.

Hagan, Thos. A., Chicago.
Hagans, F. M., Lincoln.
Hagler, A. L., Springfield.
Hagler, E. E., Springfield.
Hairgrove, J. W., Jacksonville.
Halbert, W. A., Springfield.
Hall, O. O., Milford.
Hamilton, J. W., Mt. Vernon.
Hanna, R. A., Peoria.
Hardesty, T. O., Jacksonville.
Hardt, H. G., Lincoln.
Harman, Chas. C., Chicago Heights.
Harris, M. L., Chicago.
Harsha, W. M., Chicago.
Hart, S. P., Auburn.
Harvey, H. M., Chicago.
Harvey, W. F., Rushville.
Hasson, Edward, Peoria.
Hayden, A. A., Chicago.
Heffermann, M. H., Decatur.
Hellebrandt, P. J., Chicago.
Herdmon, S. B., Taylorville.
Herrick, James B., Chicago.
Herrin, Philip, Villa Grove.
Hill, T. F., Athens.
Hill, G. E., Girard.
Hill, H. C., Streator
Hill. J. H., Mechanicsburg.
Hockman, B. F., Sumner.
Holben, R. E., Mt. Auburn.

Hovey, W. C., Nokomis.
Hudson, Ben, Palmyra.
Humiston, Chas. E., Chicago.
Hurst, S. T., Greenview.

Irwin, W. L., Plymouth.
Iseman, Lawrence L., Chicago.

James, H. L., Springfield.
James, A. C., Springfield.
Jenkins, J. T., Carthage.
Jenks, F. H., Rockford.
Johnson, C. B., Champaign.
Johnson, L. H., Casey.
Johnston, C. R., Decatur.
Jones, Herbert C., Decatur.
Jones, Walter C., Chicago.
Jones, J. T., Salem.
Jones, Leroy, Hoopeston.
Jones, Solomon, Danville.
Jump, D. W., Plainfield.

Kanavel, A. B., Chicago.
Kauffman, J. S., Blue Island.
Kelly, J. W., Springfield.
Kelly, P. H., Chillicothe.
Kelly, P. M., Litchfield.
Kemp, C. H., Elmwood.
Keyes, A. Belcham, Chicago.
Kimball, Z. V., Hillsboro.
King, C. B., Chicago.
King, C. D., Gillespie.
Kleckner, R. E., Mattoon.
Klein, Matthias J., Chicago.
Knapp, A. A., Peoria.
Knopf, S. A., New York City.
Knudson, T. J., Springfield.
Koessler, Carl K., Chicago.
Krafft, H. L., Peoria.
Kreider, G. N., Springfield.
Kretschmer, H. L., Chicago.

Lacy, L. S., Pittsfield.
LaDue, Burdette, Ottawa.
Lawler, T. A., Taylorville.
Leonard, E. F., Jacksonville.
Lesage, C. A., Dixon.
Lillie, C. W., East St. Louis.
Lindsay, L. N., Forsyth.
Lingle, W. E., Cobden.
Liston, J. B., Carlinville.
Little, E. O., Hume.
Lobdell, Effie L., Chicago.
Lockie, G. D., Springfield.
Lockwood, C. R., Kankakee.
Lockwood, E. K., Virden.
Lovell, Frank B., Gibson City.
Lowell, A. D., Chicago.
Luster, R. D., Granite City.
Lydston, G. Frank, Chicago.
Lyles, A. R., Virginia.
Lyon, G. E., Moweaqua.

Maley, W. H., Galesburg.
Mammen, E., Bloomington.
Marshall, J. A., Pontiac.
Mason, Franklin, Rossville.
Mason, Jas. S., Urbana.
Mason, O. F., Springfield.
Matheny, R. C., Galesburg.
Matthews, J. P., Carlinville.
Mauers, Franklin, Springfield.
Mayes, W. E. G., Dawson.
Mayes, J. W. D., Illiopolis.
McCaughey, R. S., Hoopeston.
McClanahan, V. A., Viola.
McClelland, C. E., Decatur.
McClelland, R. A., Yorkville.
McClelland, S. E., Decatur.
McComack, J. L., Bone Gap.
McComas, C. A., New Canton.
McConnell, Robert J., Baylis.
McDavid, J. T., Decatur.
McDeed, W. G., Monticello.
McDonald, J. T., Mattoon.
McDonald, J. W., Aurora.
McElfresh, C. H., Springfield.
McKinney, F. J., Gifford.
McLaren, Frank, Whitehall.
McLaughlin, A. W., Chicago.
McMichael, O. W., Chicago.
McMillan, J. C., New Berlin.
McNeill, H. I., Newman.
McPherson, C. W., Hazelhurst.
McWilson, Eva, Manhattan.
Meirink, B. J., Germantown.
Meloy, J. E., Peoria.
Mercer, Ray, Loraine.
Mercer, W. E., Liberty.
Mertz, A. A., Pawnee.
Metcalf, F. H., Franklin.
Metcalf, H. L., Springfield.
Mettler, L. H., Chicago.
Metz, Irving W., Springfield.
Middleton, A. B., Pontiac.
Miles, Walter, Viola.
Millard, H. A., Minonk.
Miller, C. H., Chicago.
Miller, J. Estill, Quincy.
Miller, J. T., Decatur.
Miller, Louis H., Pana.
Miller, R. B., Sullivan.
Milligan, Josephine, Jacksonville.
Milligan, C. W., Springfield.
Miner, Jas., Winchester.
Minnick, E. M., Mason City.
Mitchell, E. L., Monmouth.
Mitchell, H. C., Carbondale.
Mitchell, R. A., Marshall.
Mittan, F. J., Decatur.
Moler, R. L., Browns.
Montgomery, C. C., Lincoln.
Moore, Chas. P., Chicago.
Morgan, T. W., Virden.
Morey, L. L., Vandalia.
Morton, D. F., Taylorville.
Morrison, H. T., Springfield.
Morrison, W. S., Minonk.
Motley, E. G., Virden.
Motley, E. R., Virden.
Mudd, W. B., Athens.
Mundt, G. H., Chicago.

Munson, S. E., Springfield.
Murfin, W. D., Patoka.
Murphy, E. S., Dixon.
Murphy, J. C., Ridgway.

Nance, Willis O., Chicago.
Neal, J. R., Springfield.
Nelson, C. S., Springfield.
Newcomb, C. F., Champaign.
Newcomb, W. K., Champaign.
Nickerson, L. H. A., Quincy.
Niedringhaus, R. E., Granite City.
Niess, John, Carmi.
Noble, W. D., Chicago.
Norbury, Frank P., Springfield.
Norris, F. A., Jacksonville.
Norris, S. B., McClure.

O'Byrne, C. C., Chicago.
O'Hara, Fred S., Springfield.
Oliver, E. W., Peoria.
Oren, S. A., Lewistown.
Orndorff, B. H., Chicago.
Orr, L. E., Petersburg.
Osborne, John W., Champaign.
Ostrom, Louis, Rock Island.
Ottis, D. M., Springfield.
Owens, E. B., Dixon.
Oyler, H. S., Lincoln.

Page, J. F., Eureka.
Palmer, G. T., Springfield.
Palmer, M. J., Beardstown.
Parker, Chas. E., Sterling.
Parker, George, Peoria.
Parker, William, Mt. Sterling.
Parkes, Chas. H., Chicago.
Parkhurst, F. J., Danvers.
Parmley, J. G., Marion.
Parrish, M. P., Decatur.
Peacock, S. B., Baylis.
Pelton, Chas. L., Springfield.
Pelton, O. L., Elgin.
Pennington, J. R., Chicago.
Percy, N. M., Chicago.
Percy, J. F., Galesburg.
Perisho, E. E., Streator.
Pettit, J. W., Ottawa.
Petty, F. F., Chauncey.
Pfeiffenberger, J. M., Alton.
Phifer, F. N., Centralia.
Pitner, T. J., Jacksonville.
Plummer, S. C., Chicago.
Pogue, Jos., Edwardsville.
Pollock, H. L., Chicago.
Pollock, M. D., Decatur.
Preble, R. B., Chicago.
Price, C. E., Robinson.
Price, E. M., Astoria.
Price, J. R., Chicago.
Priest, T. W., Williamsville.
Prince, A. E., Springfield.
Punat, Edward, Chicago.
Purcell, A. C., Streator.

Rafferty, H. N., Robinson.
Rainey, G. S., Salem.
Ray, D. S., Cuba.
Rembe, Charles, Lincoln.
Rhodes, O. M., Bloomington.
Rice, J. H., Quincy.
Richter, H. M., Chicago.
Riggs, J. P., Media.
Ringnell, F. O., Moline.
Ritter, John, Chicago.
Rivard, G. J., Assumption.
Roan, C. F., Chicago.
Roane, J. Q., Carlyle.
Robison, John A., Chicago.
Robinson, J. W., New Berlin.
Robinson, S. T., Edwardsville.
Rockefeller, L. D., Bunker Hill.
Rogier, H. O., Mason City.
Rose, W. E., Vandalia.
Rosenow, E. C., Chicago.
Russell, F. H., Eldred.
Rutledge, J. A., Colorado Springs.
Ryan, C. T., Philo.
Ryman, H. D., Vernon.

Schneck, S. W., Mt. Carmel.
Schroeder, S. P., Nashville.
Schoenneshofer, Wm., Lostant.
Schreiber, G. F., Chicago Heights.
Schweer, J. L., Beardstown.
Scott, J. W., Venice.
Schwergerdt, W. E., Champaign.
Seidel, A. W., Chicago.
Seippel, Clara P., Chicago.
Selby, D. E., Chicago.
Senn, E. J., Chicago.
Shallenberger, W. E., Canton.
Shastid, W. E., Pittsfield.
Shearl, J. M., Middletown.
Sibley, Frank C., Carmi.
Sibley, W. C., Fairffield.
Sidley, Frederick K., Peoria.
Sihler, G. A., Litchfield.
Simmons, A. H., Girard.
Simpson, J. P., Palmer.
Sippy, Bertram W., Chicago.
Sloan, E. P., Bloomington.
Sloan, John F., Peoria.
Smith, C. F., Kankakee.
Smith, D. G., Elizabeth.
Smith, H. W., Roodhouse.
Smith, J. W., Bloomington.
Smith, S. A., Lincoln.
Smith, W. H., Godfrey.
Snell, M. W., Litchfield.
Soliday, M. H., Taylorville.
Solyers, J. O., Springfield.
Songer, F. S., Kinmundy.
Southwick, G. E., Chatham.
Spindel, E. S., Springfield.
Spurck, M. D., Peoria.
Stealy, J. H., Freeport.
Stein, Otto J., Chicago.
Stericker, G. F., Springfield.
Stewart, H. J., Kewanee.
Stewart, J. H., Exeter.
Stremmel, S. C., Macomb.

Strouse, Solomon, Chicago.
Suker, G. F., Chicago.
Swenson, C. G., Chicago.

Tankersley, Geo. A., Owaneco.
Tarnowsky, de Geo., Chicago.
Taylor, C. M., Bethany.
Taylor, G. G., Elkhart.
Taylor, I. H., Springfield.
Taylor, J. L., Springfield.
Taylor, L. C., Springfield.
Taylor, Percy L., Springfield.
Thomas, Chas. D., Peoria.
Thompson, O. M., Ellsworth.
Thompson, P. C., Jacksonville.
Thornton, C. M., Royalton.
Tice, Frederick, Chicago.
Titterington, M. B., Jerseyville.
Tivnen, R. J., Chicago.
Trapp, A. R., Springfield.
Turner, A. F., Taylorville.
Tuttle, H. H., Springfield.
Twitchell, James W., Belleville.

Uehren, W. A., Aurora.

Vadakin, J. H., Bethany.
Van Derslice, J. W., Chicago.
Van Meter, E. R., Fancy Prairie.
Van Winkle, J. W., Chicago.

Wagner, Carl, Chicago.
Wall, A. S., Champaign.
Walsh, E. A., Springfield.
Walsh, J. H., Chicago.
Walters, J. C., Springfield.
Walton, J. W., Clay City.
Ward, H. B., Urbana.
Warne, F. C., Chicago.
Washburn, G. N., Peoria.
Webster, G. W., Chicago.
Webster, E. M., Chicago.
Weir, S. W., Marshall.
Weis, E. W., Ottawa.
Welch, J. W., Cuba.
Wells, C. A., Quincy.
Welsh, M. M., Odell.
Welton, C. B., Peoria.
West, Hyde, Taylorville.
Whalen, Chas. J., Chicago.
Wheeler, Herbert, Grant Park.
White, J. V., Auburn.
Whitefort, A. R., St. Elmo.
Wiener, A. C., Chicago.
Wiggin, J. L., E. St. Louis.
Wilbur, F. M., Riverton.
Wilcox, J. M., Clinton.
Wilhelmy, C. F., Decatur.
Wilkinson, C. E., Danville.
Wilkinson, G. E., Alton.
Will, O. B., Peoria.
Wilson, J. F., Versailles.
Windmueller, E., Woodstock.
Wolfe, H. M., Taylorville.
Woltmann, H. C., Jacksonville.
Wood, C. M., Decatur.
Wood, Casey A., Chicago.
Wood, Harry, Batchtown.
Wood, W. C., Decatur.
Woodruff, Harry W., Joliet.
Woodruff, Thomas A., Chicago.
Woods, A. N., Chicago.
Woodward, C. E., Decatur.
Wright, C. D., Springfield.
Wright, Harry G., DeKalb.
Wright, L. D., Rochester.
Wright, N. A., Manito.

Yarno, R. S., Chicago.
Yeck, C. W., Paunee.
Yoder, Henry L., Morton.
Yolton, R. G., Bloomington.
Young, J. G., Pontiac.
Young, W. A., Springfield.

Zinser, H. A., Washington.
Zorger, A. L., Champaign.
Zurawski, J. A., Chicago.

NEWS OF THE STATE

NEWS ITEMS

— Dr. Thomas F. Neil, of Sligo, Pa., was named on the staff of the Watertown Hospital.

— Dr. Orville Wilhelmy, of La Place, has sold his practice to Dr. Curtis A. Humaker, of Anna, and will locate in Colorado.

—Dr. Thomas J. Balhatchet, of Chicago, it is said, has been haled to court on the charge of performing an illegal operation.

—Dr. E. L. Crouch, of Maple Grove Sanitarium, Jacksonville, has purchased a small farm in that city to be used presumably for sanitarium purposes.

—Dr. Henry T. Rupp, of 330 South Campbell Avenue, Chicago, was arrested August 6 on a warrant charging him with operating a confidence game.

— Dr. G. C. Couch, who for the past several years has been practicing at Friendsville, will move to Mt. Carmel, where he will engage in the practice of medicine.

—Dr. S. O. Eads, of Decatur, will quit practice in that city on October 1, and move to Danville, Ky., where he will cultivate a farm of 345 acres purchased at the price of $140 per acre.

—Dr. George H. Rue, of Lexington, McLean County, has recently sued the Wabash Railroad for $10,000 for personal injuries received while accompanying two cars of cattle to St. Louis.

— Dr. J. R. Rigg will retire from active practice the first of August, and his partner, Dr. Connolley, will have charge of the practice from then on. Dr. Rigg will continue to make Mt. Pulaski his home.

— Dr. Clara Hayes, recently granted a physician's license by the state board of health, has been appointed by the civil service commission as a member of the medical staff of the Peoria State Hospital.

—The Christian County Medical Society has sent a communication to the Board of Supervisors disapproving of the practice of calling on physicians and surgeons outside the county to give attendance to county patients.

—Dr. W. H. Fitch, of Rockford, while on a pleasure trip in New Mexico, had the misfortune of fracturing a leg. The accident was caused by the team of horses which he was driving becoming frightened and throwing him out.

—One S. R. Chamlee, a cancer specialist with offices at 36 West Randolph Street, Chicago, who was practicing without a license, has been found to maintain a hospital at 3055 Fulton Street that city, and is under investigation by the health department of Chicago.

—Seth Marion Wells, an itinerant medical practitioner, who has been "working" Quincy with the aid of the *Daily Whig and Journal*, and a negro minstrel show, has been summoned to show cause why his outfit should not be broken up.

—The Lincoln Woman's Club has issued its program of the seventeenth annual course of lectures as follows: October 13, Sex-hygiene, Dr. Bertha Anderson; January 8, Heredity, Dr. Clara Towne; February 5, Eugenics, Mrs. W. R. Whetsler.

—Dr. Walter Nason, of Ashkum, has sold his practice and will devote his time to managing a land project in Canada. Dr. Bemisderfer has returned from California and bought the practice of Dr. Nason, of Ashkum. He formerly practiced at Monee.

—Miss Casey, superintendent to the Bethea Hospital, Dixon, has resigned her position. Many rumors are current as to the breaking of the rules of the institution by physicians who had cases at the hospital and of Miss Casey's efforts to protect the student nurses. Miss Casey has been superintendent for two years.

—According to plea filed with County Clerk at Elgin, the ballots of the last general primary in Kane County are reeking with diphtheria germs, and a recount might cause an epidemic throughout the county. The plea sets forth the fact that Edward Harvey, a judge of the election at LaFox, died two days after the election, of diphtheria.

—The Rock Island Commissioners have taken steps for the establishment of a tuberculosis sanitarium in that city provided for by a vote of the people two years ago, authorizing a special tax levy. A committee of three physicians will be named to act with the city physician, Dr. G.G. Craig, in recommending a site for the new institution.

—Since July 1, the following articles have been accepted for inclusion with new and nonofficial remedies:

Urethral Suppositories Adrenal Comp. (H. K. Mulford Co.).
Vaginal Suppositories Adrenal Comp. (H. K. Mulford Co.).
Adrenal Comp. Lozenges (H. K. Mulford Co.).
Adrenal Ointment (H. K. Mulford Co.).
Adrenal Rectal Suppositories 5 grs.

—Dr. George P. Caldwell is said to have been the first physician locating in Madison County. His home, now the present limits of Granite City, was established in 1802. Madison County at that time embraced practically all the present boundary of Illinois. Dr. Caldwell came from Kentucky, and was one of the United States Senators elected when the state was admitted to the Union in 1818. He died in Morgan County, Aug. 1, 1846.

—Dr. Abraham Jacobi, of New York, says: A physician does right to place his best energies in the duties of his profession, but his real and foremost duty is to his country. In the strain and hurry of the modern doctor's life he has little time left to take an interest in public life. But the time has come when we in the profession must express ourselves and enter into the public life of the nation. We should use our influence and knowledge when legislation is needed in the interest of the public

health. Legislators lack the knowledge that some physicians have, and it is at this time that physicians should step in and offer the benefit of their knowledge. In this respect physicians should work for everything that in the broadest sense will make for the health of the nation. I am interested and appreciative of the need of the reforesting of the open lands of the country. Physicians can aid in legislation which will bring this about.

—The initial number of the *Bulletin* of the Fox River Valley Medical Society breezed into our office with a most readable account of doings along the Fox. The publication committee, composed of Drs. A. L. Mann, Elgin; J. H. MacDonald, Aurora, and R. G. Scott, Geneva, deserve credit for an interesting and up-to-date bulletin. The August number contains an announcement of a joint picnic to be held at Mill Creek, August 28, by the Aux Plaines Branch of the Chicago Medical Society and the Fox River Valley Medical Society. A chicken dinner will be followed by the following papers: "Undescended Testicle," Thos. I. Motter, Oak Park; "Etiology, Pathology and Treatment of Summer Diarrhea," James W. VanDerslice, Oak Park; "Trichiniasis," Emil Windmueller, Woodstock; "Myositis Ossificans with Report of Case," A. R. Reeder, Aurora; "Hemorrhagic Diseases of the New-Born," A. F. Krueger, Chicago.

—Down at Wauconda, Ill., the people are doing an unusual and commendable thing. They are raising money to erect a monument to Doc Dawson, for many years the great man of that little city. Not that Doc held an especially high rank as a physician, nor that he ever discovered any revolutionary cures or principles of medicine. He was a plain, every day sort of Doc, and the fact that he lived alone with a dog for his only "family" indicates his lack of social ambition. Doc's immortality rests on the fact that he never charged a fee for his services. When a patient was able and felt inclined to pay, Doc allowed him to do so, according to value received. But the poor and needy never paid tribute to his skill, and never lacked for his services when they were required. Balzoc has devoted a great book to a physician of this type and the story of Doc Dawson would doubtless prove interesting material for a worthy author. Incidentally, there are a great many more physicians in this world with a touch of Doc Dawson in them than the average man realizes. The doctor with the exorbitant bill is standard joke material, but he is mostly exaggeration, like all other jokes. But only a few of us stop to think of this side of the case when we are ill.—Peoria *Journal*.

—A chiropractor by the name of L. G. Brown was found guilty by a jury in a justice court in Quincy. It took the jury three hours to decide the case, although it had been clearly shown that Brown practiced without a license, and charged for his services. The *Quincy Herald* makes the following comments on the case which are of interest, showing the opinion of the laymen in such a case:

"The jury deciding the case was out three hours and it is understood at one time nearly half of them stood in favor of acquittal. While none of the jury seemed to have much faith in the school of treatment which

the doctor represented, it was felt that he was sincere enough in believing that he was practicing legitimately, and hence he should not be made responsible for the fine. However, argument of those who felt that the presence of unlicensed practitioners of any sort was harmful to the community induced a verdict finding Dr. Brown guilty, and the report was made shortly after 9 o'clock and the jury excused. The first ballot stood 8 to 4 for conviction, the third 7 to 5, the ninth 9 to 3, then 10 to 2, and the twenty-first 11 to 1. It was unanimous on the twenty-second.

"The defense immediately announced their intention to appeal the case, and an appeal bond of $300 was immediately provided. The appeal will be heard before the October term of the circuit court. Lieutenant Governor Morris of Wisconsin, who is here as chief attorney for the defense, will come again to defend Dr. Brown in the circuit court. He has been chief council for the United Chiropractors' Association for a number of years, and yesterday conducted the defense with what otherwise would have been dignified and proper legal procedure, had not several of the medical witnesses persisted in treating the whole affair as a joke. At least two of the physicians called by the plaintiff as witnesses apparently forgot that they were simply witnesses in a legal proceeding, and that all they were required to do was to answer questions put to them by the attorneys, and they either refused to give sensible answers to many of the scientific questions propounded by Governor Morris, or else answered in insulting and sarcastic manner. The demeanor of Governor Morris under these trying circumstances was gentlemanly and commendable, and there is little question but that the tactics pursued by some of the doctors was one of the elements which contributed to the unwillingless of several of the jurymen to return an unfavorable verdict.

"Such answers as were given by the doctors as witnesses would never be tolerated in a court of record. One doctor, evidently angered, declared in a most insulting way that there was only one disease known to the medical world for which there was an absolute and specific cure, and that was the disease of Personal Ego which afflicted practitioners of new and strange schools of healing, and some attorneys, especially those defending such practitioners. When asked the remedy, he replied, 'The electric chair.'

"In his argument to the jury, Attorney Gilmer declared that Dr. B. F. Palmer of Davenport, head of the college wherein there are 500 students of chiropractic, was the most dangerous man in Iowa out of a prison cell. He declared that he was insane, a paranoiac, a man whose irresponsibility was criminal. In his closing argument Attorney Gilmer was even more vehement. Attorneys Ellermeier and Morris made extended arguments.

"The crowd was large in the morning and even larger in the afternoon, and quite a number of people remained at the court-room even until the verdict was received."

The defense placed only one witness on the stand, Dr. B. F. Palmer. He is at the head of an institution at Davenport, attended by 500 students of chiropractic. His father was the originator of the system of treatment. He himself has practiced for sixteen years. He stated that chiropractic was a new science, based on the principal that what is generally understood as disease is the result of subluxation of the vertebræ of the spine. Chiropractic does not use drugs. All that it does is to adjust the spine to a normal condition to relieve the pressure upon the nerves, and then let nature furnish a cure. He stated that subluxations range from a minimum of one 1,600th of an inch to one-quarter of an inch. These are detected by the sense of feeling of the chiropractor and with instruments for measurements.

PERSONAL

Dr. E. A. Fischkin, Chicago, sailed for Europe about September 1.

Dr. B. Barker Beeson, of Chicago, has returned from a trip to Vienna.

Dr. L. T. Gregory, of Lovington, will take charge of a book store in that city.

Dr. L. A. Glaze, of Rayville, was recently operated on at East St. Louis for gall-stones.

Dr. W. G. Murray, of Springfield, has taken a position in the State Hospital at Kankakee.

Dr. Theodore B. Sachs has resigned as Physician in Chief of the Chicago-Winfield Sanatorium.

Dr. W. H. McCandless will locate in Sterling, and occupy the office of the late Dr. Crandall.

Dr. Homer Little, of East St. Louis, will build a modern residence on State Street of that city.

Dr. R. E. Kleckner, of Mattoon, will soon leave for Europe to pursue a year's course of study in Vienna.

Dr. E. F. Neal, of Elgin, and his bride, formerly of Wabash, Ind., have returned from their honeymoon.

Dr. G. W. Brock, assistant physician at the Peoria State Hospital, has resigned to enter private practice.

Dr. C. B. Caldwell has been reinstated at the Lincoln State School and Colony as assistant superintendent.

Dr. A. H. Dollear has resigned from the staff of the Kankakee State Hospital to take special work in Chicago.

Dr. Howard D. Child, Franklin, N. H., has been appointed assistant physician at the Kankakee State Hospital.

Dr. T. J. Schweer, of Beardstown, returned July 29 from a 3,000 mile auto trip to Ohio, Indiana and New York.

Dr. Anna Peterson, of Chicago, has been assigned temporarily as graduate nurse to the Kankakee State Hospital.

Dr. John B. Ellis, of Chicago, has been appointed consulting ophthalmologist to the State Training School for Girls.

Dr. Watson Gailey, of Bloomington, will leave in November for Europe, where he will take up the study of surgery.

Dr. Louis H. Athon and Dr. Earl B. Jewell have been appointed assistant physicians at the Kankakee State Hospital.

Dr. J. C. Halloway, of Galesburg, was recently compelled to undergo a surgical operation, which seems likely to prove successful.

Dr. Ruth Alexander, of Southern Indiana Hospital for Insane, has been appointed assistant physician in the Lincoln State School and Colony.

Dr. Barnet Lemchen has been appointed assistant physician at the Anna State Hospital, and Dr. Drury L. Fish at the Kankakee State Hospital.

Dr. Elizabeth D. Carroll, assistant physician at the Peoria State Hospital, has been transferred to the staff of the Jacksonville State Hospital.

Dr. Charles Ricksher, of the Psychiatric Institute, Wards Island, New York, has been appointed as assistant physician at the Kankakee State Hospital.

Dr. Charles R. Lowe, of Ann Arbor, Mich., and Dr. W. Hall Crutcher, of Palmer, Neb., have been elected assistant physicians at the Kankakee State Hospital.

Dr. F. W. Nickel, physician in the Illinois School for the Deaf, and the Illinois School for the Blind, and laboratory assistant at the Jacksonville State Hospital, has resigned.

Dr. Thomas S. Crowe, of Chicago, whose connection with the staff of Cook County Medical Department was a subject of recent criticism, has started for Europe to be gone six months.

Dr. F. J. Sullivan has been authorized to act as assistant superintendent at the Kankakee State Hospital during the absence of Dr. S. D. Wilgus and assistant superintendent C. F. Read.

Dr. F. J. Eberspacher, of Pana, writes that he does not expect to return to that city before the first of March, thus lengthening his visit by three months beyond the time he had originally expected.

Dr. G. W. Brock, who recently resigned from the staff of the Peoria State Hospital as assistant physician, has returned to the service with appointment in the same rank in the Kankakee State Hospital.

Dr. L. C. Miller, of Champaign, will go to Chicago the first of October, where he will take postgraduate course in the College of Medicine. During his absence his practice will be attended by Dr. V. C. Morton, of Peoria.

Dr. Eugene Cohn, assistant superintendent of the Peoria State Hospital, has enjoyed a leave of absence to study surgery at St. Mary's Hospital at Rochester, Minn. During his absence Dr. E. C. Levitin of the Peoria State Hospital staff acted as assistant superintendent.

Dr. Clara Harrison Towne, psychologist at the Lincoln State School and Colony, has been directed by the State Board of Administration to visit the schools under the jurisdiction of the Board for the purpose of making an inspection of the methods of teaching and the character of the pupils, and to make such recommendations as she may see fit.

REMOVALS

Dr. V. C. Morton has removed from Peoria to Rantoul.

Dr. A. P. Kittle of Wakefield has removed to Newton, Ill.

Dr. R. G. Dakin has removed from Magnolia to Waterloo, Iowa.

Dr. Wm. R. Mangum has removed from Maryville to Bridgeport, Ill.

Dr. E. A. Weisenhorn, formerly of Quincy, has removed to Teutopolis, Ill.

Dr. C. M. Riley of Alton has removed to 3945 Magnolia avenue, St. Louis, Mo.

Dr. John F. Beatty has removed from Granite City to Everett, Washington.

Dr. William V. Secher, for many years a practitioner of Tolono, Ill., has removed to Urbana.

Dr. F. Willard Brown, of Knoxville, Iowa, has removed to Dwight, Ill., where he will practice his profession.

Dr. H. A. Berry, of East Lynn, has removed to Elk City, Okla., where he will resume the practice of medicine.

NEW INCORPORATIONS

Ziegler Hospital Association, Chicago, $6,000; care for sick. Robert H. Zoller, Andrew J. Ryan and Daniel S. Jerka.

United States Goitre Remedy Company, Chicago, $1,000; deal in medical remedies. Incorporators, Albert S. Louer, D. Hollinghausen and C. D. White.

PUBLIC HEALTH

—Brill's disease—nothing more or less than a very mild type of typhus fever—is known to be endemic in certain cities of the United States. We know of no cases present in Chicago but, owing to the lack of familiarity with this disease on the part of physicians generally and in consideration of the very mild character of the cases elsewhere recognized, it is not impossible that unrecognized cases of this disease may now be or lately have been in existence in this city. The importance of early recognition of the disease and the prompt inauguration of measures for the prevention of its spread causes the Department to issue this note of warning and information to physicians of Chicago and vicinity. That no undue alarm may arise from this notice let us again emphasize that the type of the disease is of an extremely mild character, a fact which is fully borne out by the experience of Dr. N. E. Brill of New York, who has observed 255 cases in that vicinity without a single death. In fact the disease was so mild in character that it was not positively recognized as the dreaded typhus fever until experiments conducted by Drs. Anderson and Goldberger of the U. S. Hygienic Laboratory, Public Health and

Marine-Hospital Service, Washington, D. C., proved it so to be. Typhus fever is a disease of the very poor and the personally unclean. It thrives best in dirty, overcrowded and otherwise insanitary quarters, and it has been quite conclusively demonstrated that the infection is borne from one individual to another by the body louse, and possibly by the head louse. Dr. Brill has seen but two cases among the well-to-do classes. Dr. Brill's general description of the disease is as follows: "It begins rather suddenly, often by a distinct chill or chilly sensation. This is followed by general body pains and a headache of increasing agonizing severity. Fever develops quickly, the temperature reaching its maximum on the third day, after which it remains fairly constant, averaging between 103 and 104, occasionally as high as 106. The patients are much prostrated, and, in some, apathy is a prominent feature. On the fifth or sixth day of the disease an eruption appears, which is rather characteristic, and differentiates the disease from most other infectious disease. This eruption is fairly profuse, but discrete, consisting of a maculopapular rash, dull red in color, erythematous in character; the spots are irregular in outline, though usually ovoid, 2 to 4 mm. in diameter. Under pressure a spot may be caused to fade, but it cannot be obliterated, thus showing an evident escape of some of the blood contents of the capillaries into the surrounding dermal tissues. Sometimes the spot becomes distinctly hemorrhagic (petechia). They appear on the trunk and extremities, even rarely on the palms and soles. The eruption is never profuse as in measles, sometimes even being scanty, then showing less than one hundred individual spots, which may be fairly well scattered over the trunk, arms and buttocks, and along the sides of the thighs. The eruption is permanent until the end of the disease; it does not appear in crops, but develops and reaches its full efflorescence within twenty-four hours after the first spots appear. The disease lasts twelve to fourteen days, when the fever suddenly declines, in many cases with a critical fall in temperature, which may come to normal within twelve hours; in others, with a rapid lysis within thirty-six hours, and in a few, with lysis extending over a period of sixty hours. With the fall in temperature the agonizing headache disappears, the spots rapidly fade, leaving within a few hours only brownish-yellow stains on the skin, sometimes disappearing altogether within twenty-four hours thereafter. Convalescence is speedy. In a few cases rigidity of the neck and Kernig's phenomena appear. The urine in most cases shows a trace of albumin and hyalogranular casts. The white blood count averages 11,000 cells. The blood shows no power of agglutinating any of the organisms of the typhoidal group. Blood cultures are absolutely negative. Children are but rarely affected, the age of most common occurrence being from twenty to forty years. The sexes are about equally affected. There seems to be no distinct seasonal incidence." Physicians are urged to promptly report to this department all suspicious cases coming under their notice.—From *Bulletin Chicago Department of Health.*

MARRIAGES

SIMON H. SOBOROFF, M.D., to Miss Rebecca Soboroff, both of Chicago, June 25.

E. V. D. MORRIS, M.D., to Miss Mary Oppie, both of Galesburg, Ill., August 19.

HENRY JOHN PLENZ, M.D., to Miss Margaret Schultheis, both of Chicago, July 5.

ERNEST MONROE HARTFIELD, M.D., to Miss Marie Gabbert, both of Chadwick, July 7.

EDWIN VAIL LAPHAM BROWN, M.D., to Miss Frieda Kirchhoff, both of Chicago, August 10.

HOLLIS ELMER POTTER, M.D., Chicago, to Miss Blanche Morse of Dillon, Montana, July 24.

THOMAS WILLIAMS LEWIS, M.D., Chicago, to Miss Mamie B. Fauntleroy, at Lynchburg, Virginia, July 11.

Rev. Victor W. Dorris, an evangelist, and NETTIE AUSTIN MURPHY, M.D., a practicing physician, both of Paris, Ill., were married in the parlors of the Plaza Hotel, Monday, August 19.

JAY T. WOOD, M.D. of Springfield, Ill., and Miss Charity Coe, of Rochester, Ill., were secretly married on the 6th of April, at Pontiac. Dr. Woods and wife have located at Chicago, where he will take up the practice of medicine.

DEATHS

R. M. FULKERSON, M.D., died suddenly at his home in Mounds, Ill., Aug. 11, 1912, at the age of 65 years.

LAWRENCE B. GLAZE, M.D., of Grayville, Ill., died at the Henrietta Hospital, East St. Louis, Aug. 12, 1912, following an operation for cancer of the liver; age 60.

EDWIN SYLVESTER SWISHER, M.D., New York University, New York City, 1876; of Socorro, N. M.; formerly of Canton, Ill.; died in Kansas City, August 1, from heart disease.

F. J. BEAL, M.D., who was born and raised in Arcola, and afterward became a professor in the New York Polyclinic, died in the hospital of that institution in New York recently; age 44.

WILLIAM A. BROWN, M.D. (license, Illinois years of practice, 1878), for several years a practitioner of Danville, Ill., died at his home in Los Angeles, Cal., July 25, from senile debility; age 82.

SILAS TALBERT YOUNT, M.D., Bellevue Hospital Medical College, 1876; formerly of Lafayette, Ind., but for twenty years a resident of Chicago, a specialist in nervous and mental diseases, died in St. Luke's Hospital in that city, August 6, from myocarditis; age 56.

LEWIS H. WATSON, M.D., Eclectic Medical Institute, Cincinnati, 1867, of Chicago, died at the Columbus Hospital in that city, August 13, after an operation for disease of the kidney; aged 70.

ROBERT HILTON WALCH, M.D., Illinois Medical College, Chicago, 1897; for several years a member of the faculty of his alma mater, died at his home in Chicago, August 12, from heart disease; aged 59.

GALLOWAY TRUAX, M.D., Castleton (Vt.) Medical College, 1849; for many years a practitioner of Maquoketa, Ia.; died at the home of his son in Chicago, July 27, from pleurisy; aged 86.

WILLIAM SEYMOUR JOHNSON, M.D., Hahnemann Medical College, Chicago, 1868; one of the oldest homeopathic physicians of that city; a veteran of the Civil War; died at his home, July 27, from cerebral hemorrhage; aged 82.

D. E. BURLINGAME, M.D., of Elgin, died Aug. 4, 1912; aged 70. The doctor practiced in Elgin for forty-five years.

G. H. RUE, M.D., of Lexington, died Aug. 5, 1912, as a result of injuries received in a railway wreck, two years ago; he was born in New Jersey in 1848, graduated from Hahnemann Medical College, Chicago, and had practiced in Lexington for twenty-eight years.

FREDERICK BRENDEL, M.D., of Peoria, died August 10, at the age of 92. He has been living in retirement at the home of his son-in-law for thirty years; he was born at Ehrlangen, Germany, in 1820; graduated in medicine in that country, and was an active figure in the Revolutionary movement of 1849. His body was cremated at Davenport.

JOHN E. SAWYER, M.D., Hahnemann Medical College, Chicago, 1884; for a number of years a practitioner of New Richmond, Wis.; St. Paul, Minn.; Colorado Springs and Chicago; died recently at his home in Chicago of heart disease; aged 57.

JOHN W. AIKEN, M.D. (license years of practice, Illinois, 1878), for more than half a century a practitioner of Tennessee, Ill., died in the Marietta Phelps Hospital, Macomb, Ill., July 25, from cerebral hemorrhage; age about 80.

JOHN WILLIAM RIGHEIMER, M.D., College of Physicians and Surgeons, Chicago, 1910; head intern of the St. Anthony De Padua Hospital, Chicago; died in Garrett, Ind., July 12, from ptomain poisoning; aged 24.

Book Notices

PRACTICAL ANATOMY. By John C. Heisler, M.D., Professor of Anatomy in the Medico-Chirurgical College of Philadelphia. With 366 illustrations, of which 225 are in color. J. B. Lippincott Company, Philadelphia and London. Price $4.50.

Professor Heisler has issued this guide in a convenient form which must appeal to all students in the dissecting room. It is in fact a small edition of the excellent Piersol's Anatomy, and for the average physician contains all the matter necessary for use in general practice. One hundred and seventy-one of the three hundred and sixty-six illustrations are made specifically for this work, and add greatly to its value.

THE SURGICAL CLINICS OF DR. JOHN B. MURPHY OF MERCY HOSPITAL, CHICAGO. Volume 1, No. 2.

The second number of Dr. Murphy's Clinics continues the high standard set by the first number, and places before the general practitioner in the most instruc-

tive way a great deal of valuable information. As we have said before, no surgical practitioner in the world has greater skill as a teacher, and the fact that Dr. Murphy has a wonderful variety of cases appearing in his clinics, makes the products of his pen of supreme importance. We understand that the surgical clinics have been in great demand and trust that they will be read by all readers of THE JOURNAL.

THE PITUITARY BODY AND ITS DISORDERS. Clinical States Produced by Disorders of the Hypophysis Cerebri. By Harvey Cushing, M.D., Associate Professor of Surgery the Johns Hopkins University, Professor of Surgery (elect) Harvard University. J. B. Lippincott Company, Philadelphia and London. Three hundred and nineteen illustrations. Price $4.00.

This amplification of the Harvey Lectures delivered before the New York Academy of Medicine in 1910, is a noteworthy contribution to medical science. It opens up an entire new field of study, and Dr. Cushing has undoubtedly done some excellent work in considering these long neglected cases. No doubt it will soon be found that diseases of pituitary bodies are as important and nearly as frequent as are the diseases of the thyroid. No better proof of the value of the instruction given at Johns Hopkins University could be found, than is contained in the 340 pages of this remarkable work, which should be in the hands of every up-to-date practitioner in Illinois.

PHARMACOLOGY AND THERAPEUTICS. By H. C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics in the Medico-Chirurgical College; Physician to the Medico-Chirurgical Hospital; Second Vice-Chairman of the Committee of Revision of the United States Pharmacopeia. J. B. Lippincott Company, Philadelphia and London. Price $4.00.

Dr. Woods, who we believe is the third generation of writers of this name on this subject, has brought before his readers the extraordinary advancement in Pharmacology in the last 20 years. He believes that today this department of medical knowledge, which was formerly a jumble of isolated facts, is an orderly science. Our knowledge of the changes produced by drugs in the bodily function has been enormously increased, but more important than this expansion in our information as to what drugs do, is the fact that we are beginning to understand how they do it, and thereby to be able to correlate the facts of drug action. The present conception of pharmacology is utterly different from that of a generation ago.

The author feels equally strongly that pharmacology is of no value to the medical student save as a basis for practical therapeutics, and the more clearly the student can be made to perceive the relation between pharmacologic science and the clinical employment of drugs for the relief of human suffering, just so much more valuable will his pharmacology become to him, and the more successful will be his future therapeutics.

The work contains over 400 pages and should be read from cover to cover. One familiar with the principles of therapy which are here discussed has no temptation to prescribe proprietary remedies.